ALTUSCN™
Enterprise KVM Solutions by ATEN

LCD KVMP Switch
KL3116 / KL3116T
User Manual

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FCC Information

This is an FCC Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

This product is RoHS compliant.

SJ/T 11364-2006

The following contains information that relates to China.

部件名称	有毒有害物质或元素					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
电器部件	●	○	○	○	○	○
机构部件	○	○	○	○	○	○

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006规定的限量要求之下。

●: 表示符合欧盟的豁免条款，但该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006的限量要求。

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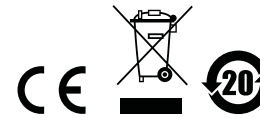

User Information

Online Registration

Be sure to register your product at our online support center:

International		http://support.aten.com
North America	ATEN TECH	http://www.aten-usa.com/product_registration
	ATEN NJ	http://support.aten.com

Telephone Support

For telephone support, call this number:

International		886-2-8692-6959
North America	ATEN TECH	1-888-999-ATEN
	ATEN NJ	1-732-356-1703

User Notice

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The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Package Contents

Basic Package

The basic KL3116 / KL3116T package consists of:

1 KL3116 / KL3116T LCD KVMP Switch with Standard Rack Mount Kit

2 Custom KVM Cable Sets

1 Custom Console Cable Set

1 Firmware Upgrade Cable

1 Power Cord

1 Grounding Wire

1 User Manual*

1 Quick Start Guide

Optional Equipment

Depending on any optional equipment that you may have purchased, one of the following may be included in your package:

- Standard Rack Mounting Kit - Long
- Easy-Installation Rack Mounting Kit - Short
- Easy-Installation Rack Mounting Kit - Long

Check to make sure that all of the components are present and in good order. If anything is missing, or was damaged in shipping, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the switch or to any other devices on the KL3116 / KL3116T installation.

***** Features may have been added to the KL3116 / KL3116T since this manual was printed. Please visit our website to download the most up to date version of the manual.

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About This Manual

This user manual is provided to help you get the most from your KL3116 / KL3116T. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

Overview

Chapter 1, Introduction, introduces you to the KL3116 / KL3116T system. Its purpose, features and benefits are presented, and its front and back panel components are described.

Chapter 2, Hardware Setup, describes how to set up your installation. The necessary steps – from a basic single stage hookup to a complete daisy chained operation are provided.

Chapter 3, Basic Operation, explains the fundamental concepts involved in operating the KL3116 / KL3116T.

Chapter 4, OSD Operation, provides a complete description of the KL3116 / KL3116T's On Screen Display (OSD) and how to work with it.

Chapter 5, Keyboard Port Operation, details all of the concepts and procedures involved in the Hotkey operation of your KL3116 / KL3116T installation.

Chapter 6, Keyboard Emulation, provides tables that list the PC to Mac and PC to Sun keyboard emulation mappings.

Chapter 7, Firmware Upgrade, explains how to use this utility to upgrade the KL3116 / KL3116T's firmware with the latest available versions.

An Appendix, provides specifications and other technical information regarding the KL3116 / KL3116T.

Conventions

This manual uses the following conventions:

`Monospaced`	Indicates text that you should key in.
[ ]	Indicates keys you should press. For example, [Enter] means to press the **Enter** key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1.	Numbered lists represent procedures with sequential steps.
♦	Bullet lists provide information, but do not involve sequential steps.
→	Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start → Run means to open the *Start* menu, and then select *Run*.
	Indicates critical information.

Product Information

For information about all ALTUSEN products and how they can help you connect without limits, visit ALTUSEN on the Web or contact an ALTUSEN Authorized Reseller. Visit ALTUSEN on the Web for a list of locations and telephone numbers.

International		http://www.aten.com
North America	ATEN TECH	http://www.aten-usa.com
	ATEN NJ	http://www.aten.com

Chapter 1
Introduction

Overview

The KL3116 / KL3116T Dual Rail LCD KVMP Switch is an integrated LCD console and KVM (keyboard, video, and mouse) switch that offers secure access to 16 attached computers and mounts in only 1U of rack space. It features an independently retractable 17" LCD monitor and keyboard with built-in touchpad. To maximize space in your data center the keyboard “hides away” when not in use, while the thin profile LCD monitor reclines flush against the rack to enable continuous monitoring of computers. For even greater ease of use, the KL3116T features a 17” touchscreen LCD monitor.

An extra console port is provided on the rear panel to manage the KL3116 / KL3116T from an external console (monitor, PS/2 or USB keyboard and mouse). The KL3116 / KL3116T supports both PS/2 and USB keyboards and mice in the KVM Ports (CPU Ports). For added convenience it also supports an external USB mouse. The KL3116 / KL3116T also supports USB peripheral devices to be used with the attached computers.

A single KL3116 / KL3116T can control up to 16 computers. As many as 31 additional switches can be daisy-chained together, so that up to 512 computers can all be controlled from a single keyboard, monitor, and mouse console. (See *Supported KVM Switches*, page 69 for more details.)

Your KL3116 / KL3116T investment is protected by an included *Firmware Upgrade Utility*. You can stay current with the latest functionality improvements by downloading firmware update files from our website as they become available, and using the utility to quickly and conveniently perform the upgrade.

Setup is fast and easy: plugging cables into their appropriate ports is all that is entailed. Because the KL3116 / KL3116T intercepts keyboard input directly, there is no software to configure, no need to get involved in complex installation routines, nor any need to be concerned with incompatibility problems.

Access to any computer connected to the installation is easily accomplished either by means of a powerful, mouse driven, on-screen display (OSD) menu system, or by entering hotkey combinations from the keyboard. A convenient *Auto Scan* feature also permits automatic scanning and monitoring of the activities of all computers running on the installation one by one.

Features

- Integrated KVM console with 17" LCD monitor in a *Hideaway*™ housing
- Touchscreen model (KL3116T) offers convenient operation without extending the keyboard module or using a mouse
- LCD module rotates up to 120º for a more comfortable viewing angle
- Space saving technology – up to two consoles (sharing one bus) can control up to 16 computers
- Extra console port – manage computers from an external console (monitor, USB or PS/2 keyboard and mouse) connected to the switch
- Dual interface – supports PS/2 and USB keyboards and mice connections to computers
- Supports an external USB mouse
- USB 1.1 peripheral support for attached computers on the same level
- Conveniently located station and port selectors, each with two 7-segment LED displays to quickly switch to target computers
- Dedicated *Hotkey* mode and OSD invocation keys reduce the number of keystrokes and provide quick access to these functions
- Convenient computer selection via mouse-driven, intuitive on-screen display (OSD) menus and hotkeys
- OSD tree structure makes finding and managing computers easy
- Dual slide – LCD monitor module slides independently of the keyboard/ touchpad module
- Console lock – the console remains securely locked away when not in use
- Daisy-chain up to 31 additional switches to control up to 512 computers
- No software required
- Hot pluggable – add or remove computers without powering down the switch
- OSD port list automatically expands when new stations are added
- Auto Scan mode enables continuous monitoring of user-selected computers
- Administrator/user password authorization for enhanced security protection; administrator access rights synchronized between master and slave stations
- Two level password security – authorized users view and control computers
- Supports one administrator and four user accounts with separate profiles

- Broadcast support – commands from the keyboard can be broadcast to all available computers on the installation
- OSD screen automatically adjusts to resolution changes
- Two types of logout: manual and timed
- *Hideaway*™ housing is slightly less than 1U with top and bottom clearance for smooth operation in 1U of rack space
- DDC emulation – video settings of each computer are automatically adjusted for optimal output to the monitor
- Standard 105-key keyboard
- Keyboard status restored when switching computers
- Keyboard and mouse emulation (PS/2 and USB) for smooth switching and simultaneous booting of multiple computers even when the console focus is elsewhere
- Superior video quality – supports resolutions up to 1280 x 1024 @ 75 Hz
- Upgradable firmware – simultaneously upgrade the firmware for all KVM switches on the chain via the chaining bus

Requirements

External Console

The following hardware components are required for the external console:

- A VGA, SVGA, or multisync monitor capable of displaying the highest resolution provided by any computer in the installation.
- A USB or PS/2 keyboard and mouse

Computers

The following equipment must be installed on each computer:

- A VGA, SVGA, or multisync video graphics card with an HDB-15 port.

Note: The integrated LCD monitor's maximum resolution is 1280 x 1024 @ 75 Hz. Make sure that none of the computer resolution settings exceed the LCD monitor's maximum resolution.

- PS/2 mouse and keyboard ports (6-pin Mini-DIN), or at least one USB port.
- Direct support Sun USB systems; or, for Sun legacy systems, an ATEN CV130A Sun Console Converter.

Cables

Substandard cables may damage the connected devices or degrade overall performance. For optimum signal integrity and to simplify the layout, we strongly recommend that you use the high quality CS Custom Cable sets described below:

Function		Length	Part Number
KVM switch to KVM switch (daisy-chaining)		0.6 m 1.8 m	2L-1700 2L-1701
KVM switch to computer	PS/2	1.2 m 1.8 m 3.0 m 6.0 m 1.8 m	2L-5201P 2L-5202P 2L-5203P 2L-5206P 2L-5702P
	USB	1.2 m 1.8 m 3.0 m 5.0 m	2L-5201U 2L-5202U 2L-5203U 2L-5205U

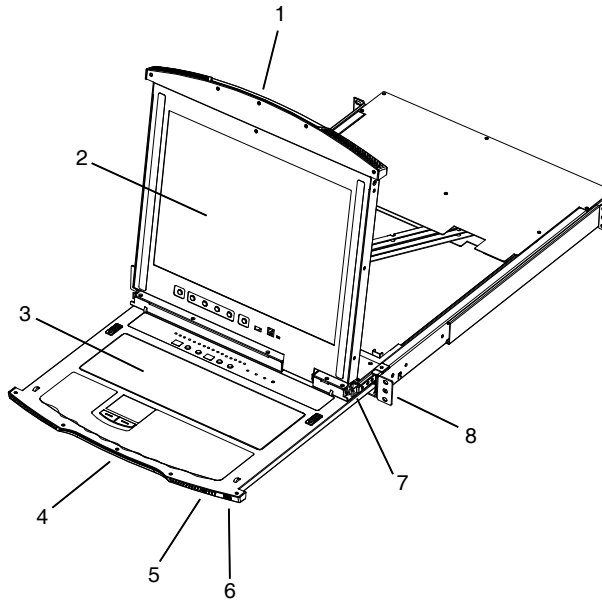
Operating Systems

Supported operating systems are shown in the table, below:

OS			Version
X86	Microsoft		Dos 6.22 (Does not support USB), NT (Does not support USB), 2000 and higher
	Linux	RedHat	9.0, Fedora and higher, RHEL AS 4, RHEL 5, RHEL
		SUSE	10 and higher, OpenSUSE 10.2; SLES 10 SP1
		Debian	3.1, 4.0
		Ubuntu	7.04, 7.10
	Unix	AIX	4.3, 5L (V5.2, V5.3), V6 (V6.1)
		FreeBSD	5.5, 6.1, 6.2
	Novell		Netware 5.0 (Does not support USB), 6.0, 6.5
SUN			Sun Solaris 8, 9, 10
Mac			9.0, 9.1, 10.1, 10.2, 10.3, 10.4 , 10.5

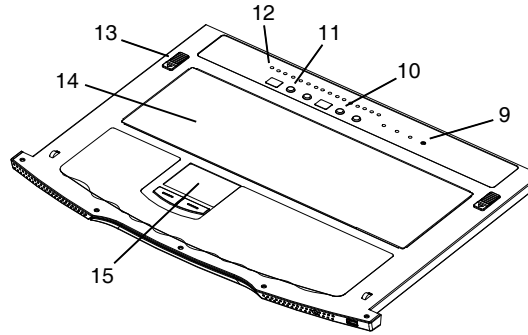
Components

Front View



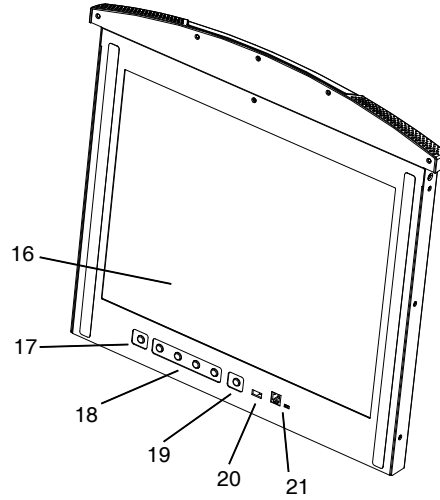
No.	Component	Description
1	Upper Handle	Pull to slide the LCD module out; push to slide the module in. See item 7 in this table and page 21 for more details on sliding the console in and out.
2	LCD Module	See *LCD Module*, page 8.
3	Keyboard Module	See *Keyboard Module*, page 7.
4	Lower Handle	Pull to slide the keyboard/touchpad module out. See item 1 in this table and page 21 for more details on sliding the console in and out.
5	Power LED	Lights to indicate that the unit is receiving power.
6	External Mouse Port	Use this port to connect an external USB mouse.
7	LCD Release Catch	These catches (one on each side) release the LCD module so you can slide it away.
8	Rack Mounting Brackets	The rack mounting brackets located at each corner of the unit secure the chassis to a system rack. See *Standard Rack Mounting*, page 12, for details.

Keyboard Module



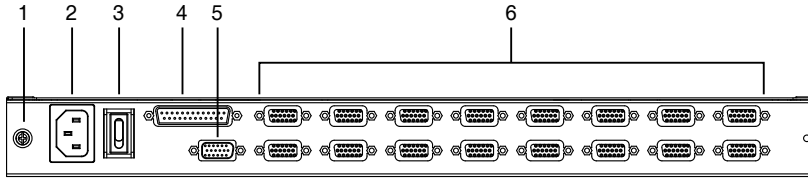
No.	Component	Description
9	Lock LEDs & Reset Switch	The Num Lock, Caps Lock, Scroll Lock LEDs are located here. A Reset Switch is located to the right of the Lock LEDs. Press this recessed switch in with a small object to perform a system reset.
10	Station Selection Area	◆ The LED displays the station number that has KVM focus. ◆ The left button shifts the KVM focus down the chain (Station 2 → Station 1, etc.). After Station 1, it cycles back to the last station. ◆ The right button shifts the KVM focus up the chain. After the last station, it cycles to Station 1.
11	Port Selection Area	◆ The LED displays the port number that has KVM focus. ◆ The left button shifts the KVM port focus down (3 → 2, 2 → 1, etc.). After Port 1, it cycles back to the last port. ◆ The right button shifts the KVM port focus up (2 → 3, 3 → 4, etc.). After the last port, it cycles to Port 1.
12	Port LEDs	An *On Line* LED lights to indicate that the computer attached to its corresponding port is up and running.
13	Keyboard Release Catch	These catches (one on each side) release the keyboard/ touchpad module so you can slide it away.
14	Keyboard	Standard 105-key keyboard
15	Touchpad	Standard mouse touchpad

LCD Module



No.	Component	Description
16	LCD Display	After sliding the LCD module out, flip up the cover to access the LCD monitor.
17	KVM OSD Button	As an alternative to using the OSD hotkey, press this button to access the OSD when viewing a port. **Note:** This button is available on the KL3116T model only.
18	LCD OSD Controls	Buttons to control the position and picture settings of the LCD display are located here. See page 27 for details.
19	LCD Power Button	Press this button to turn the LCD monitor on and off. When the LCD monitor is off, this button illuminates; when the LCD monitor is on, this button does not illuminate. (This function only affects the monitor, not the KVM switch itself.)
20	USB Port	The USB port is available to connect a USB 1.1 peripheral device (flash drive, CD-ROM drive, etc.) to the switch.
21	Firmware Upgrade Section	**Firmware Upgrade Port:** The Firmware Upgrade Cable that transfers the firmware upgrade data from the administrator's computer to the KL3116 / KL3116T plugs into this RJ-11 connector. **Firmware Upgrade Switch:** During normal operation this switch should be in the NORMAL position. (See page 57 for firmware upgrading details.)

Rear View



No.	Component	Description
1	Grounding Terminal	The grounding wire used to ground the switch attaches here.
2	Power Socket	This is a standard 3-pin AC power socket. The power cord from an AC source plugs in here.
3	Power Switch	This standard rocker switch powers the unit On and Off.
4	Daisy-chain Port	When daisy-chaining units, plug the cable in here.
5	External Console Port	For flexibility and convenience, the KL3116 / KL3116T supports an external KVM console. A custom console cable set is provided to attach the external console's monitor, keyboard, and mouse.
6	KVM Ports	The cables that link to the computers plug in here. **Note:** The shape of these connectors has been specifically modified so that only custom KVM cables designed to work with this switch can plug in. (See *Cables*, page 4, for details.) Do **NOT** attempt to use ordinary 15-pin VGA connector cables to link these ports to the computers.

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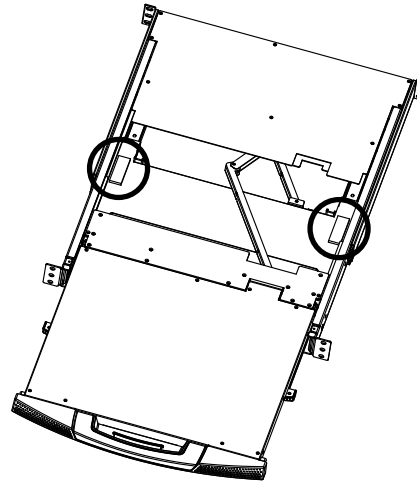
Chapter 2
Hardware Setup

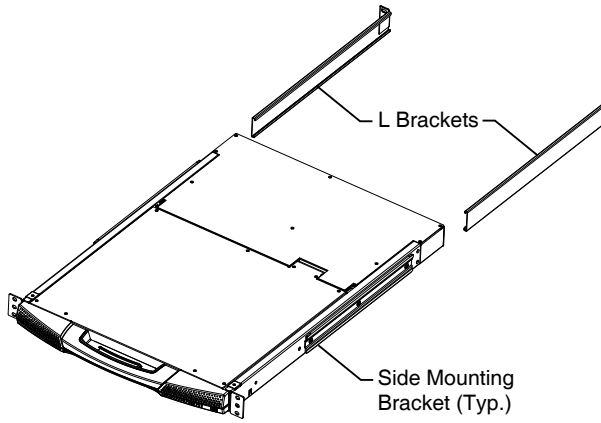
Before you Begin

1. Important safety information regarding the placement of this device is provided on page 63. Please review it before proceeding.
2. Make sure that power to all the devices you will be connecting up has been turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.
3. Packing material has been inserted to protect the KL3116 / KL3116T during shipping. Slide the LCD module out until the packing material is visible. Remove the packing material before installing the unit, as shown in the diagram below.



Standard Rack Mounting

A standard rack mounting kit is provided with your KL3116 / KL3116T. The kit enables the switch to be mounted in rack with a depth of 42–77 cm.



Note: 1. It takes two people to mount the switch: one to hold it in place, the other to screw it in.

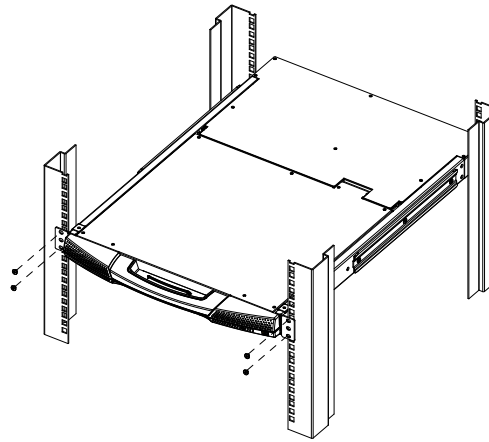
2. The rack mounting kit does not include cage nuts for attaching the KL3116 / KL3116T to a rack. If you need additional cage nuts, contact your rack dealer.

3. Optional mounting kits, including single person *Easy Installation* kits, are available with a separate purchase. See *Optional Rack Mounting*, page 72, for details.

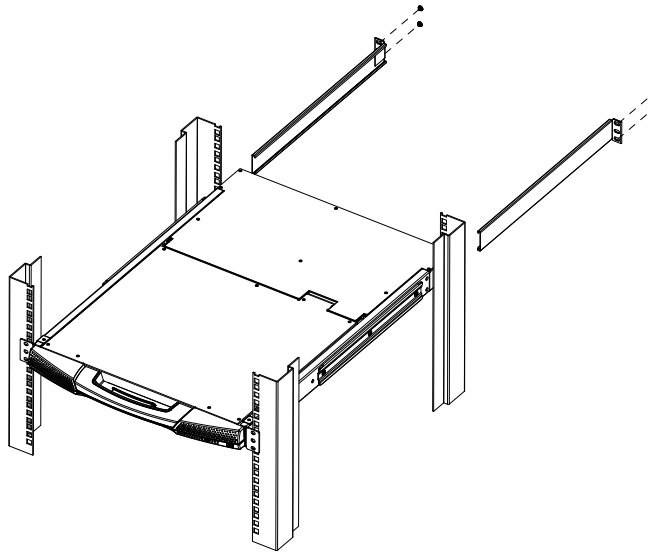
4. Allow at least 5.1 cm on each side for proper ventilation, and at least 12.7 cm at the back for the power cord and cable clearance.

To rack mount the switch, do the following:

1. While one person positions the switch in the rack and holds it in place, the second person loosely screws the front brackets to the rack.



2. While the first person still holds the switch in place, the second person slides the L brackets into the switch's side mounting brackets, from the rear until the bracket flanges contact the rack, then screws the L brackets to the rack.

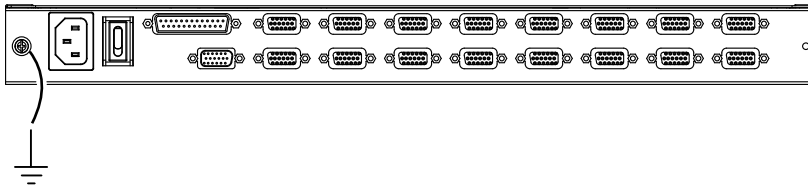


3. After the L brackets have been secured, tighten the front bracket screws.

Grounding

To prevent damage to your installation it is important that all devices are properly grounded.

Use a grounding wire to ground the KL3116 / KL3116T by connecting one end of the wire to the grounding terminal, and the other end of the wire to a suitable grounded object.



Single Level Installation

In a single level installation, there are no additional switches daisy-chained down from the first unit. To set up a single level installation, refer to the installation diagrams beginning on page 16 (the numbers in the diagram correspond to the numbers of the installation steps) and do the following:

1. Ground the KL3116 / KL3116T.
2. (*Optional*) Using the provided console cable set, plug the custom SPHD connector into the console port on the rear panel of the switch. Connect the external console's monitor and keyboard and mouse to the appropriate connectors on the other end of the console cable.
3. Using a KVM cable set (as described in the *Cables* section on page 4), plug the custom SPHD connector into any available KVM port on the switch.

   Note: Ignore the daisy-chain port at this time. It is only used when daisy chaining additional switches. Daisy-chaining is described in the next section.

4. At the other end of the cable:

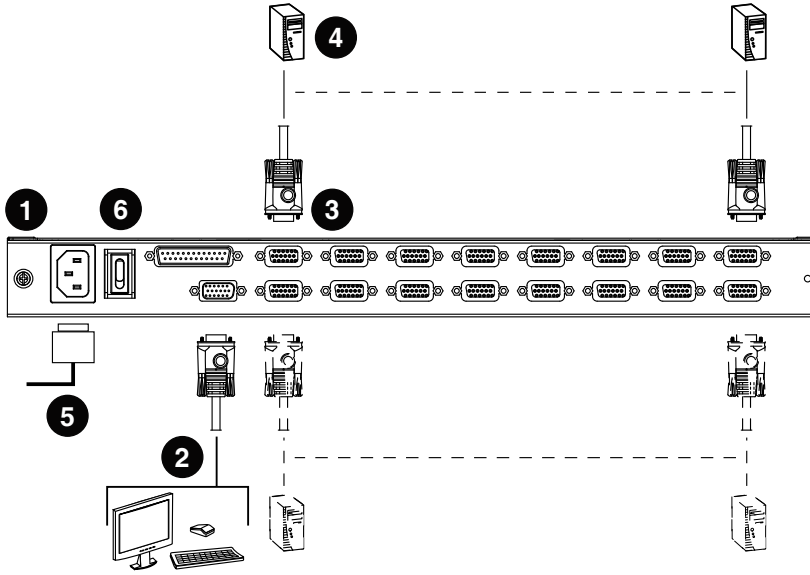
   a) For a USB connection (see page 17), plug the USB and video cables into their respective ports on the computer.

   b) For a PS/2 connection (see page 17), plug the keyboard, mouse and video cables into their respective ports on the computer.

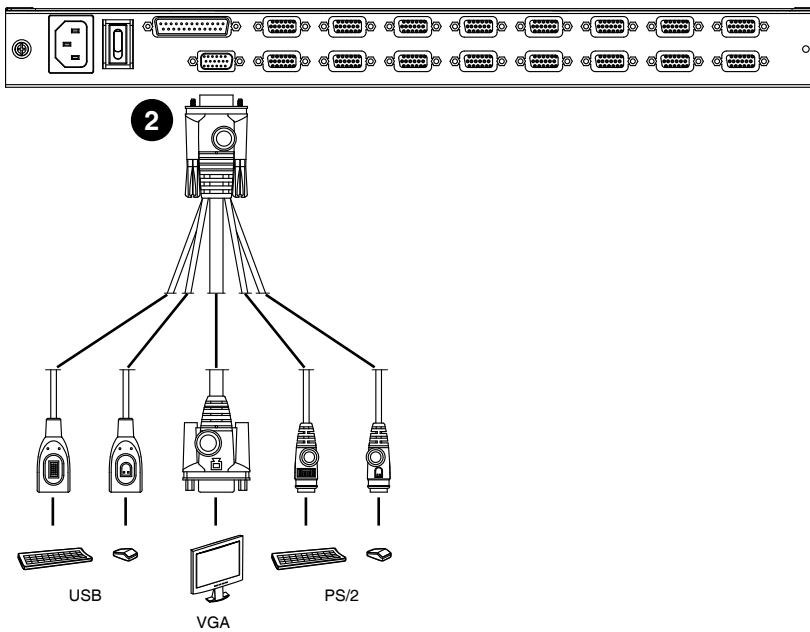
   Repeat steps 2 and 3 for any additional computers you are installing.

5. Connect the power cord to the switch and to an AC power source appropriate for the KL3116 / KL3116T.
6. Power on the switch.
7. After the switch is powered on, power on the computers.

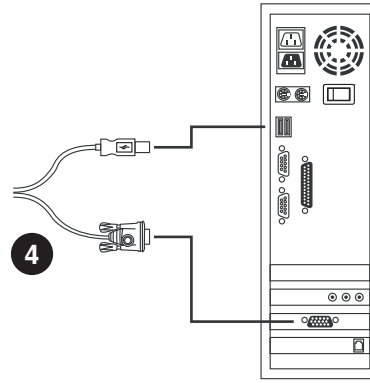
Single Level Installation Diagram



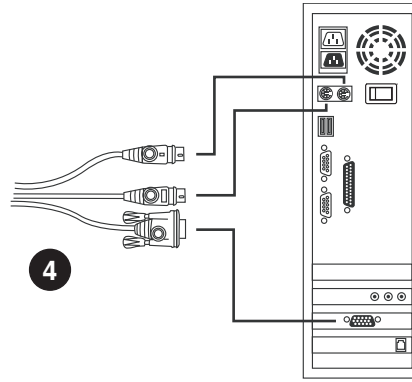
External Console Connection



USB Cable Connection



PS/2 Cable Connection



Daisy-chain Installation

To control even more computers, up to 31 additional compatible switches can be daisy-chained from the KL3116 / KL3116T. See *Supported KVM Switches*, page 69 for a list of compatible ATEN KVM switches to be used when daisy-chaining. In a complete installation, as many as 512 computers can be controlled from the KL3116 / KL3116T integrated console[1]. A table showing the relation between the number of computers and the number of compatible switches needed to control them is provided on page 70 in the Appendix. To set up a daisy-chained installation, refer to the daisy-chain installation diagram on page 19 and do the following:

1. Ground the KL3116 / KL3116T.
2. Make sure that power to all the devices you will be connecting up has been turned off.
3. Use a daisy-chain cable set (described in the *Cables* section, page 4), to connect the *Chain Out* port of the master unit to the *Chain In* port of the slave unit (first station out to second station in, second station out to third station in, etc.).
4. Use KVM cable sets (described in the *Cables* section of the switch's user manual) to connect any available KVM port on the daisy-chained switch to the keyboard, video and mouse ports of the computers you are installing.
5. Repeat the above steps for any additional switch you wish to add to the chain.
6. Power up the installation according to the following procedure:

   a) Power on the first station (KL3116 / KL3116T).

      Wait a few seconds for the unit to ascertain its station ID.

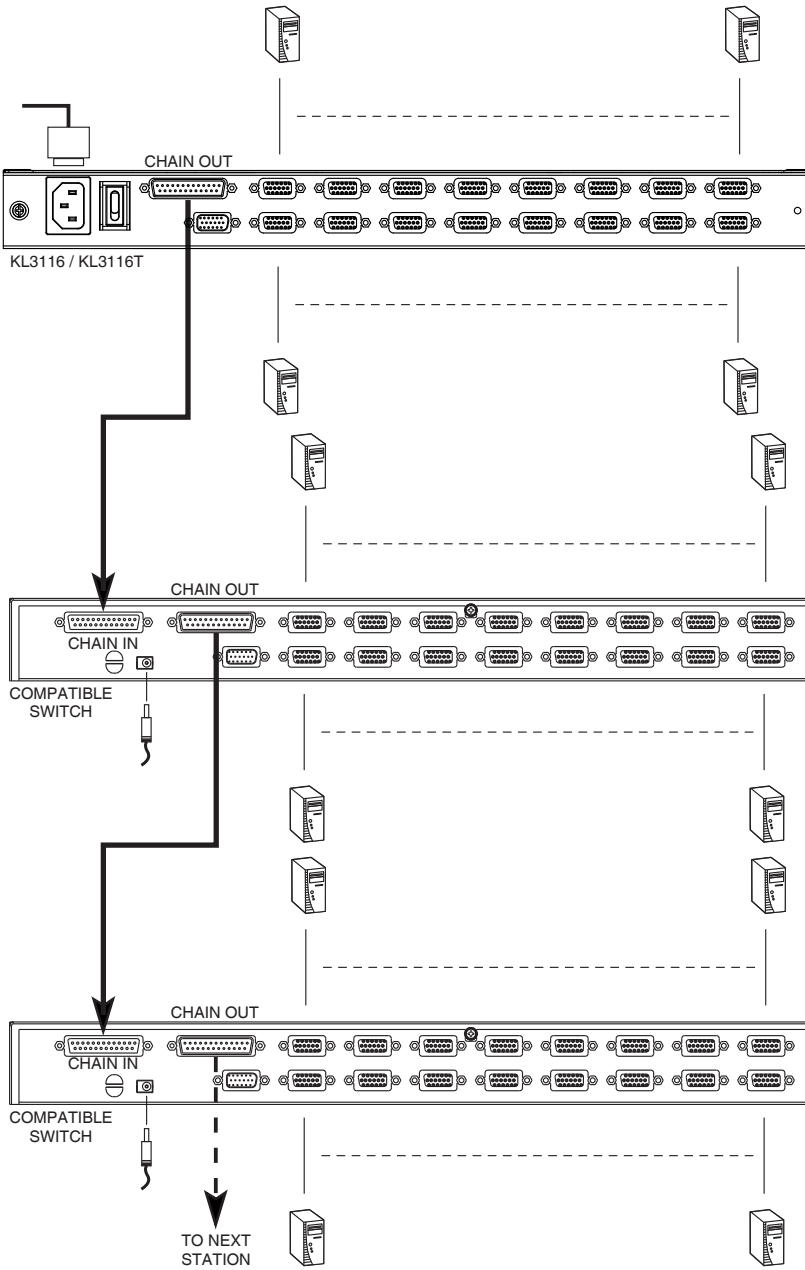
   b) Power up each daisy-chained station on the installation in turn (second station, then third station, etc.). Each switch has an LED display on its front panel to indicate its station ID (the station ID for the first level unit (KL3116 / KL3116T) is **01**, the ID for the second level switch is **02**, the ID for the third level unit is **03**, etc.

      In each case, wait for the station ID to be ascertained and displayed on the station ID LED before plugging in the next station.

   c) After all the stations are up, power on the computers.

1. When cascading, the KL3116T touchscreen function will only work on computers connected to CS1708A/CS1716A switches.

Daisy-chain Installation Diagram



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Chapter 3
Basic Operation

Opening the Console

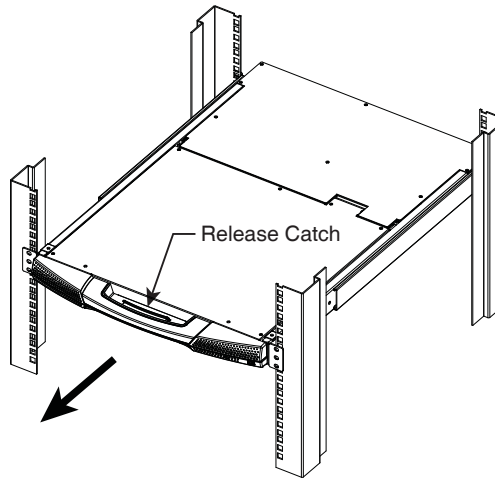
The KL3116 / KL3116T's console consists of two modules: an LCD display module located under the top cover and a keyboard/touchpad module below the LCD module.

The modules can slide together, or independently. This allows you to have the LCD display available for viewing while the keyboard / touchpad module is conveniently out of the way when not in use.

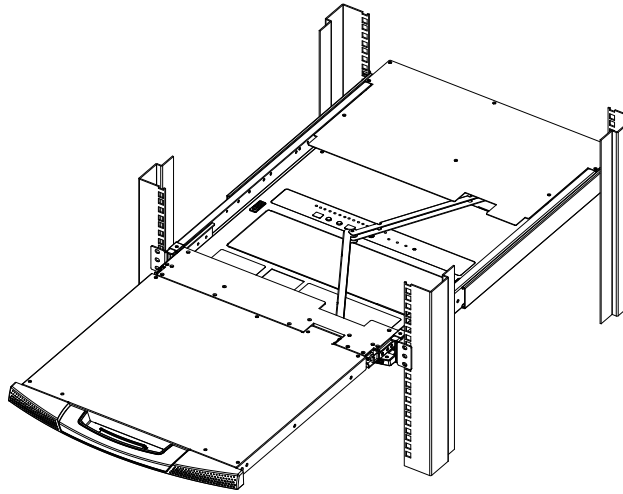
As a safety precaution, to keep the console from accidentally sliding out, it is locked into the *In* position. Before you can pull it out, you must pull the release catch.

Opening Separately

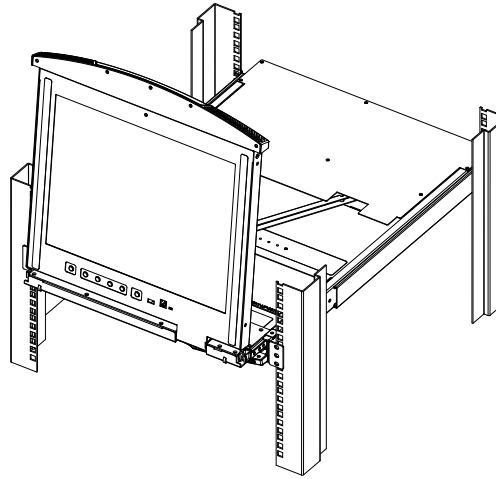
1. Pull the release catch to release the console, and pull the top panel a few centimeters toward you. Once the console has been released, you can let go of the catch.



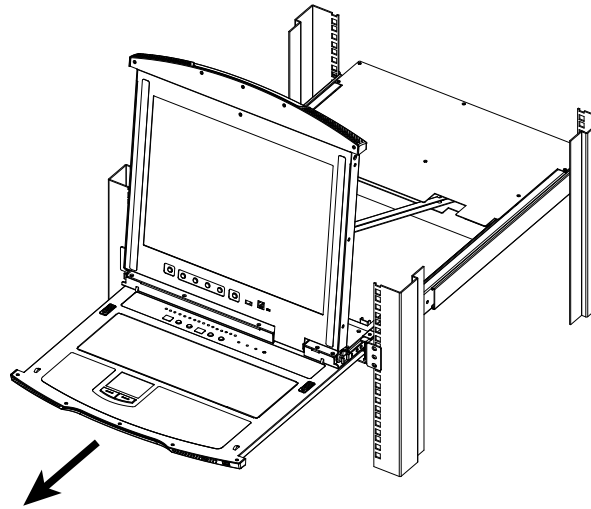
2. Pull the top panel all the way out until it clicks into place.



3. Rotate the top panel all the way back to expose the LCD screen.



4. Reach underneath and pull the keyboard module all the way out until it clicks into place.



Opening Together

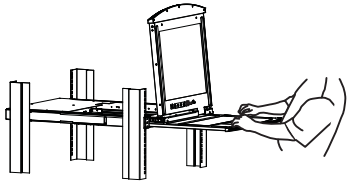
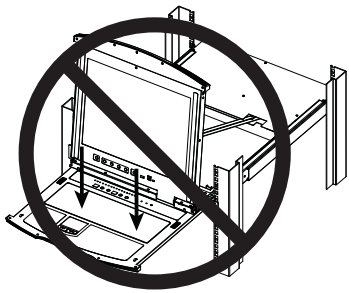
Refer to the diagrams in the *Opening Separately* section as you do the following:

1. Pull the release catch and pull the top and bottom panels out until the keyboard module clicks into place. Once the console has been released, you can let go of the release catch.
2. Pull the top panel the rest of the way out until it clicks into place.
3. Rotate the top panel all the way back to expose the LCD screen.

Note: Refer to the warning regarding placing excessive weight on the keyboard module on the following page.

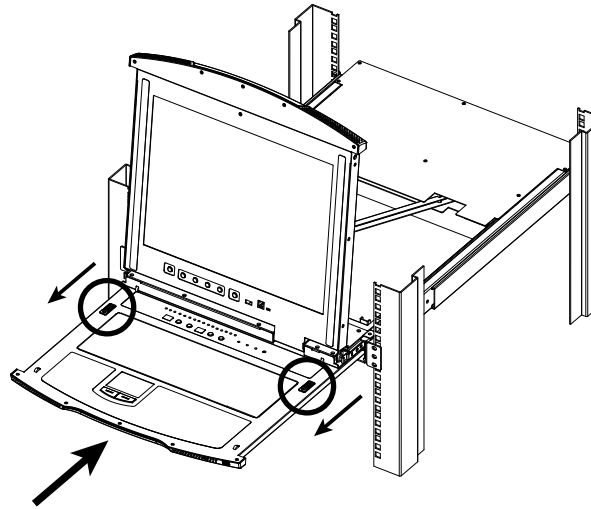
Operating Precautions

The maximum load bearing capacity of the keyboard module is 30kg. Failure to heed the information below can result in damage to the keyboard module.

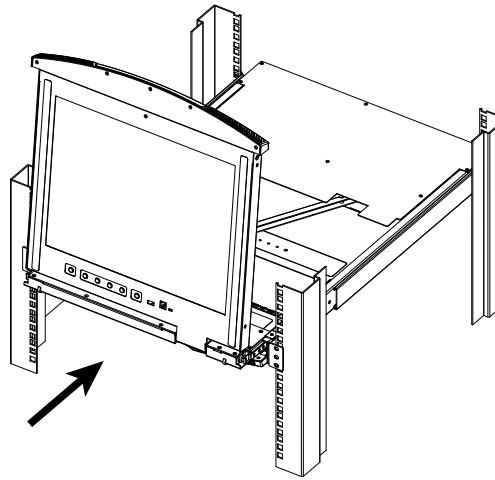
	**RIGHT!** Rest your hands and arms lightly on the keyboard module as you work.
	**WRONG!** ◆ **DO NOT** lean your body weight on the keyboard module. ◆ **DO NOT** place heavy objects on the keyboard module.

Closing the Console

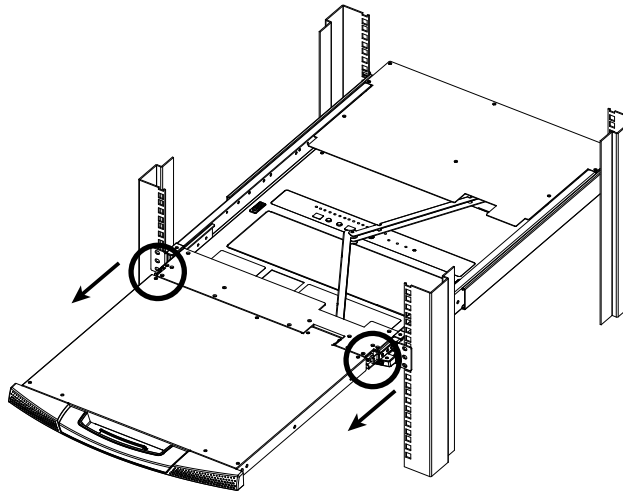
1. Pull the release catches located on either side of the keyboard toward you to release the keyboard module, then slide the module slightly in.



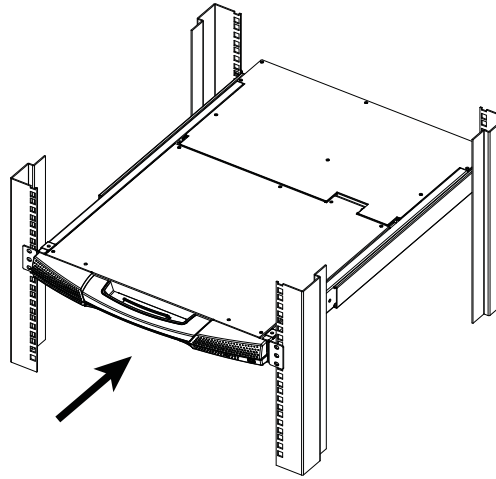
2. Let go of the catches. Using the front handle, push the keyboard module all the way in.



3. Rotate the LCD module all the way down, then pull the rear catches to release the LCD module.



4. Using the front handle, push the module all the way in.



LCD OSD Configuration

LCD OSD Buttons

The LCD OSD allows you to set up and configure the LCD display. Four buttons are used to perform the configuration, as described in the table below:

Button	Function
MENU	When you have not entered the LCD OSD Menu function, pressing this button invokes the Menu function and brings up the Main Menu.
▶|▲	When navigating through the menus, this button moves you right or up. When making an adjustment, it increases the value.
◀|▼	When navigating through the menus, this button moves you left or down. When making an adjustment, it decreases the value.
EXIT	◆ When you have not entered the LCD OSD Menu function, pressing this button performs an auto adjustment. An auto adjustment automatically configures all the settings for the LCD panel to what the OSD considers their optimum values to be. ◆ When you have entered the LCD OSD Menu function, pressing this button exits the current menu and returns you to the previous menu. Use it to leave an adjustment menu when you are satisfied with the adjustment you have made. ◆ When you are at the Main Menu, pressing this button exits the LCD OSD.

LCD Adjustment Settings

The LCD OSD adjustment settings are described in the table below:

Setting	Description
Brightness	Adjusts the background black level of the screen image.
Contrast	Adjusts the foreground white level of the screen image.
Phase	If pixel jitter or horizontal line noise is visible on the display, your LCD may have the wrong phase setting. Adjust the phase setting to eliminate these problems.
Clock	If vertical banding is visible on the display, your LCD may have the wrong clock setting. Adjust the clock setting to eliminate vertical banding.
H-Position	Positions the display area on the LCD panel horizontally (moves the display area left or right).
V-Position	Positions the display area on the LCD panel vertically (moves the display area up or down).
Color Temperature	Adjusts the color quality of the display. You can adjust the "warmth" value, color balance, etc. The *Adjust Color* selection has a further submenu that lets you fine tune the RGB values.
Language	Selects the language that the OSD displays its menus in.
OSD Duration	Lets you set the amount of time that the OSD displays on the screen. If there is no input for the amount of time you choose, the OSD display turns off.
Reset	Resets the adjustments on all menus and submenus to their factory default settings.

LCD Power Button

Press the *LCD Power* button to turn the LCD monitor on and off. When the LCD monitor is off, this button illuminates; when the LCD monitor is on, this button does not illuminate. This function only affects the monitor, not the KVM switch itself.

Hot Plugging

The KL3116 / KL3116T supports *hot plugging* – components can be removed and added back into the installation by unplugging their cables from the ports without the need to shut the unit down. In order for hot plugging to work properly, however, the procedures described below must be followed:

Switching Station Positions

You can switch station positions by simply unplugging from the old master and plugging into a new one. After you do, in order for the OSD menus to correspond to the change, you must reset the station IDs in the OSD. See *RESET STATION IDS*, page 41, for details.

Hot Plugging KVM Ports

In order for the OSD menus to correspond to the change, you must manually reconfigure the OSD to reflect the new port information. See the *F3 SET* (page 36) and *F4 ADM* (page 39), functions for details.

Note: If the computer's operating system does not support hot plugging, this function may not work properly.

Powering Off and Restarting

If it becomes necessary to power off one of the switches, be sure it is turned off or unplug its power cable from the rear panel.

Before restarting the switch you must do the following:

1. Shut down all the computers that are attached to it.

   Note: You must unplug the power cords of any computers that have the *Keyboard Power On* function. Otherwise, the switch will still receive power from the computers.

2. Wait 10 seconds, then plug the switch back in, and, if necessary, turn it on.
3. After the switch is up, power on the computers.

Note: If you have shut down more than one switch, power up the highest switch in the chain first, and work your way down to the lowest one.

Port Selection

The KL3116 / KL3116T provides three port selection methods to access the computers on the installation:

Manual Port Switching

Use the station selection and port selection areas on the keyboard to manually switch to a port. Refer to page 7 for details.

OSD Port Switching

OSD port switching is described in Chapter 4.

Hotkey Port Switching

Hotkey port switching is described in Chapter 5.

Port ID Numbering

Each KVM port on a KL3116 / KL3116T installation is assigned a unique port ID. The port ID is made up of two parts: a *Station Number*, and a *Port Number*:

- The *Station Number:* is a two digit number which reflects the switch's position in the daisy-chain sequence.

  Note: The first station KL3116 / KL3116T has a station number of 01. The first daisy-chained switch has a station number of 02, the next daisy-chained switch has a station number of 03, etc.

- The *Port Number:* is a two digit number which reflects the port on the switch that the computer is connected to.
- The *Station Number* precedes the port number.
- Station and port numbers from 1–9 are padded with a preceding zero, so they become 01–09. For example, a computer attached to **Port 6** of **Station 12** would have a port ID of: **12-06**.

Chapter 4
OSD Operation

OSD Overview

The OSD (on-screen display) is a mouse and keyboard enabled, menu driven method to handle computer control and switching operations. All procedures start from the OSD main screen.

OSD Login

The OSD incorporates a two level (administrator / user) password system. Before the OSD main screen displays, a login screen appears requiring a password. If this is the first time that the OSD is used, or if the password function has not been set, simply press **[Enter]**. The OSD main screen displays in administrator mode. In this mode, you have administrator privileges, with access to all administrator and user functions, and can set up operations (including password authorization) as you like. However, if the password function has been set, you must provide an appropriate administrator/user password in order to access the OSD.

OSD Hotkey

You can display the OSD on the LCD or an external console monitor while also viewing the display of any port on the KL3116 / KL3116T by pressing the **[Scroll Lock]** key twice.

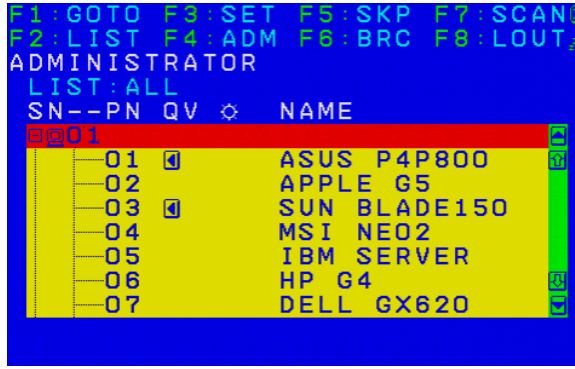
Note: You can optionally change the OSD hotkey to the Ctrl key, in which case you would press **[Ctrl]** twice (see *OSD Hotkey*, page 36). With this method, you must press the same [Ctrl] key.

KVM OSD Button

In addition to using hotkeys to display the OSD, you can recall the OSD at any time by pressing the KVM OSD button on the LCD module (see page 8). This button can also be used to dismiss the OSD from the screen.

OSD Main Screen

When you invoke the OSD, a screen similar to the one below appears:



Note: 1. The diagram depicts the administrator's main screen. The user main screen does not show the **F4** and **F6** functions, since these are reserved for the administrator and can't be accessed by users.

2. The OSD always starts in list view, with the highlight bar at the same position it was in the last time it was closed.

3. Only the ports that have been set accessible by the administrator for the current logged in user are visible (see *SET ACCESSIBLE PORTS*, page 39, for details).

4. If the port list is collapsed, click on a switch number, or move the highlight bar to it then press the right arrow key to expand the list. Similarly, to collapse a switch's port list, click on the switch number, or move the highlight bar to it then press the left arrow key to collapse the list.

OSD Main Screen Headings

The table below describes the OSD Main Screen headings.

Heading	Description
SN--PN	This column lists the port ID numbers (station number - port number) for all the KVM ports on the installation. The simplest method to access a particular computer is move the highlight bar to it, then press **[Enter]**.
QV	If a port has selected for quick view scanning (see *Set Quick View Ports*, page 40), an arrowhead displays in this column.
	The computers that are powered on and are online have a sun symbol in this column.
NAME	If a port has been given a name (see *Edit Port Names*, page 40), its name appears in this column.

OSD Navigation

- To dismiss the menu, and deactivate OSD, click the **X** at the upper right corner of the OSD window; or press **[Esc]**.
- To log out, click **F8** at the top of the main screen, or press **[F8]**.
- To move up or down through the list one line at a time, click the up and down triangle symbols (▲▼) or use the up and down arrow keys. If there are more list entries than what can appear on the main screen, the screen will scroll.
- To move up or down through the list one screen at a time, click the up and down arrow symbols (🡅🡇), or use the [Pg Up] and [Pg Dn] keys. If there are more list entries than what can appear on the main screen, the screen will scroll.
- To activate a port, double-click it, or move the highlight bar to it, then press **[Enter]**.
- After executing any action, you automatically go back to the menu one level above.

OSD Functions

OSD functions are used to configure and control the OSD. For example, you can rapidly switch to any port, scan selected ports, limit the list you wish to view, designate a port as a quick view port, create or edit a port name, or make OSD setting adjustments.

To access an OSD function:

1. Either click a function key field at the top of the main screen, or press a function key on the keyboard.
2. In the submenus that appear make your choice either by double-clicking it, or moving the highlight bar to it, then pressing **[Enter]**.
3. Press **[Esc]** to return to the previous menu level.

F1: GOTO

Clicking the **F1** field or pressing **[F1]** activates the GOTO function. GOTO allows you to switch directly to a port either by keying in the port's *Name*, or its *Port ID*.

- To use the name method, key in **1**; key in the port's *Name*; then press **[Enter]**.
- To use the port ID method, key in **2**; key in the *Port ID*; then press **[Enter]**.

Note: You can key in a partial name or port ID. In that case, the screen will show all the computers that the user has *View* rights to (see *SET ACCESSIBLE PORTS*, page 39), that match the name or port ID pattern, regardless of the current list settings (see *F2 LIST*, page 35, for details).

To return to the OSD main screen without making a choice, press **[Esc]**.

F2: LIST

This function lets you broaden or narrow the scope of which ports the OSD displays on the main screen. The submenu choices and their meanings are given in the table below.

Choice	Meaning
ALL	Lists all of the ports on the installation that have been set accessible by the administrator for the current logged in user.
QUICK VIEW	Lists only the ports that have been selected as quick view ports (see *SET ACCESSIBLE PORTS*, page 39).
POWERED ON	Lists only the ports that have their attached computers powered on.
QUICK VIEW + POWERED ON	Lists only the ports that have been selected as quick view ports (see *SET QUICK VIEW PORTS*, page 40), and that have their attached computers powered on.

Move the highlight bar to the choice you want, then press **[Enter]**. An icon appears before the choice to indicate that it is the currently selected one.

F3: SET

This function allows the administrator and each user to set up his own working environment. A separate profile for each is stored by the OSD and is activated according to the username that was provided during login.

To change a setting:

1. Double-click it; or move the highlight bar to it, then press **[Enter]**.
2. After you select an item, a submenu with further choices appears. To make a selection, either double-click it; or move the highlight bar to it, then press **[Enter]**. An icon appears before the selected choice to indicate which one it is. The settings are explained in the following table:

Setting	Function
OSD HOTKEY	Selects which hotkey activates the OSD function: **[Scroll Lock] [Scroll Lock]** or **[Ctrl] [Ctrl]**. Since the [Ctrl] key combination may conflict with programs running on the computers, the default is the [Scroll Lock] combination.
PORT ID DISPLAY POSITION	Allows each user to customize the position where the port ID appears on the screen. The default is the upper left corner, but users can choose to have it appear anywhere on the screen. Use the mouse or the arrow keys plus Pg Up, Pg Dn, Home, End, and 5 (on the numeric keypad with Num Lock off), to position the port ID display, then double-click or press **[Enter]** to lock the position and return to the Set submenu.
PORT ID DISPLAY DURATION	Determines how long a port ID displays on the monitor after a port change has taken place. The choices are: **3 Seconds** (default) and **ALWAYS OFF**.
PORT ID DISPLAY MODE	Selects how the port ID is displayed: the port number plus the port name (**PORT NUMBER + PORT NAME**) (default); the port number alone (**PORT NUMBER**); or the port name alone (**PORT NAME**).
SCAN DURATION	Determines how long the focus dwells on each port as it cycles through the selected ports in Auto Scan mode (see *F7 SCAN*, page 44). Key in a value from 1–255 seconds, then press **[Enter]**. Default is 5 seconds; a setting of 0 disables the SCAN function.

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Setting	Function
SCAN–SKIP MODE	Selects which computers will be accessed under skip mode (see *F5 SKP*, page 42), and Auto Scan mode (see *F7 SCAN*, page 44. Choices are: **ALL** - All the ports which have been set accessible (see *SET ACCESSIBLE PORTS*, page 39); **QUICK VIEW** - Only those ports which have been set accessible and have been selected as quick view ports (see *SET QUICK VIEW PORTS*, page 40); **POWERED ON** - Only those ports which have been set accessible and are powered on; **QUICK VIEW + POWERED ON** - Only those ports which have been set accessible and have been selected as quick view ports and are powered on. The default is ALL. **Note:** The quick view choices only show up on the administrator's screen, since only he has *Quick View* setting rights (see *SET QUICK VIEW PORTS*, page 40, for details).
SCREEN BLANKER	If there is no input from the console for the amount of time set with this function, the screen is blanked. Key in a value from 1–30 minutes, then press **[Enter]**. The default setting of 0 disables this function.
HOTKEY COMMAND MODE	Enables / disables the hotkey command function in case a conflict occurs with programs running on the computers.
HOTKEY	Sets the keyboard shortcut for invoking *Hotkey Mode* (see page 45). Choices are: **[NUM LOCK] + [-]** (minus) (default), and **[CTRL] + [F12]**.
OSD LANGUAGE	Sets the language used in the OSD. Choices are: English, German, Japanese, Simplified Chinese and Traditional Chinese.
TOUCHPAD	Enables / disables the touchpad.
OSD CALIBRATION	**Note:** This function is available on the KL3116T only. Calibrates the touchscreen for use with the OSD. To calibrate the touchscreen: 1. Touch the yellow cursor in the upper left corner of the OSD as instructed on-screen. 2. Touch the yellow cursor again in the lower right corner of the OSD as instructed on-screen.

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Setting	Function
TWO-POINT CALIBRATION	**Note:** This function is available on the KL3116T only. Calibrates the touchscreen for use on ports with a connected computer. **Note:** 1. Before using two-point calibration, be sure to select a port with a working computer attached, otherwise the calibration will not be started. 2. Two-point calibration must be used when calibrating a port for the first time. 3. If the calibration process is interrupted at any time (accidentally switching ports, for example), press **[ESC]** to exit and start the calibration process again. To perform a two-point calibration: 1. Use the touchpad or an externally connected USB mouse to move the cursor near the upper left corner of the screen; then, touch the cursor as instructed on-screen. 2. Use the touchpad or an externally connected USB mouse to move the cursor near the lower right corner of the screen; then, touch the cursor as instructed on-screen.
ONE-POINT CALIBRATION	**Note:** This function is available on the KL3116T only. Use this function to quickly and easily recalibrate the touchscreen with a single point. **Note:** 1. Before using one-point calibration, be sure to select a port with a working computer attached, otherwise the calibration will not be started. 2. Two-point calibration must first have been performed on the selected port before attempting a one-point calibration. If the switch senses that a two-point calibration has not been performed on the port, the one-point calibration will not be started. 3. An even easier method of resynchronizing the on-screen cursor can be found in the *Alternative Touchscreen Cursor Synchronization*, page 78. To perform a one-point calibration: 1. If necessary, use the touchpad or an externally connected USB mouse to move the cursor so that it is visible on the screen. 2. Touch the cursor as instructed on-screen.

F4: ADM

F4 is an administrator only function. It allows the administrator to configure and control the overall operation of the OSD. To change a setting double-click it, or use the up and down arrow keys to move the highlight bar to it then press **[Enter]**.

After you select an item, a submenu with further choices to select from appears. Double-click an item, or move the highlight bar to it then press **[Enter]**. An icon appears before the selected item so that you know which one it is. The settings are explained in the following table:

Setting	Function
SET USER LOGIN	Use this function to set usernames, passwords and fingerprints for the administrator and users. ◆ Usernames and passwords for one administrator and four users can be set. ◆ After you select the administrator field or one of the user fields, a screen that allows you to key in the username and password appears. Usernames and passwords can be from 1 to 16 characters long and can consist of any combination of letters and numbers (A–Z, 0–9) and some additional keys (* ( ) + : - , ? . / space). ◆ For each individual, key in the username and password, confirm the password, then press **[Enter]**. ◆ To modify or delete a previous username and/or password, use the backspace key to erase individual letters or numbers. Press **[Enter]** when done. ◆ Usernames and passwords are not case sensitive. Usernames are displayed in capital letters in the OSD.
SET ACCESSIBLE PORTS	This function allows the administrator to define user access to the computers on the installation on a port-by-port basis. For each user, select the target port; then press the **[Spacebar]** to cycle through the choices: **F** (full access), **V** (view only), or blank. Repeat until all access rights have been set, then press **[Enter]**. The default is **F** for all users on all ports. ◆ A blank setting means that no access rights are granted. The port will not show up on the user's LIST on the main screen. ◆ The administrator always has full access to all ports.
SET LOGOUT TIMEOUT	If there is no input from the console for the amount of time set with this function, the user is automatically logged out. A login is necessary before the console can be used again. This enables other users to gain access to the computers when the original user is no longer accessing them, but has forgotten to log out. To set the timeout value, key in a number from 1–180 minutes, then press **[Enter]**. The default setting of 0 disables this function.

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Setting	Function
EDIT PORT NAMES	To help remember which computer is attached to a particular port, every port can be given a name. This function allows the administrator to create, modify, or delete port names. To edit a port name: 1. Click the port, or use the navigation keys to move the highlight bar to it, then press **[Enter]**. 2. Key in the new port name, or modify/delete the old one. The maximum number of characters allowed for the port name is 12. Legal characters include: ◆ All alpha characters: **A**–**Z** ◆ All numeric characters: **0**–**9** ◆ *** ( ) + : - , ? . /** and **Space** Case does not matter; OSD displays the port name in all capitals no matter how they were keyed in. 3. When you have finished editing, press **[Enter]** to have the change take effect. To abort the change, press **[Esc]**.
RESTORE DEFAULT VALUES	This function is used to undo all changes and return the setup to the original factory default settings (see *OSD FACTORY DEFAULT SETTINGS*, page 68) except for the port name list, username and password information, which are saved.
CLEAR THE NAME LIST	This function clears the port name list.
ACTIVATE BEEPER	Choices are **Y** (on), or **N** (off). When activated, the beeper sounds whenever a port is changed; when activating the Auto Scan function (see *F7 SCAN*, page 44); or an invalid entry is made on an OSD menu. The default is **Y**.
SET QUICK VIEW PORTS	This function lets the administrator select which ports to include as quick view ports. ◆ To select/deselect a port as a quick view port, double-click the port, or use the navigation keys to move the highlight bar to it, then press **[Spacebar]**. ◆ When a port has been selected as a quick view port, an icon displays in the QV column of the LIST on the main screen. ◆ If one of the quick view options is chosen for the LIST view (see *F2 LIST*, page 35), only a port that has been selected here will display on the list. ◆ If one of the quick view options is chosen for auto-scanning (see *SCAN/SKIP MODE*, page 37), only a port that has been selected here will be auto-scanned. The default has no ports selected for quick view.

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Setting	Function
RESET STATION IDS	If you change the position of one of the stations in the daisy-chain, the OSD settings will no longer correspond to the new location. This function directs the OSD to rescan the station positions of the entire installation and updates the OSD so that the OSD station information corresponds to the new physical layout. **Note:** Only the station numbers get updated. Except for the port names, all administrator settings (such as SET ACCESSIBLE PORTS, SET QUICK VIEW PORTS, etc.) must be input again for all of the computers affected by the change.
SET OPERATING SYSTEM	This function allows the administrator to define the operating system for the computer connected to each KVM port. The default is WIN (PC compatible). To set the port operating system: 1. From the list, select the port for which you wish to set the computer's operating system. 2. Set the operating system by pressing **[Spacebar]** to cycle through WIN, MAC1, SUN, or MAC2 . 3. Press **[Esc]** to exit. The operating system you selected is assigned to the KVM port.
FIRMWARE UPGRADE	In order to upgrade the KL3116 / KL3116T firmware (see page 57), you must first enable Firmware Upgrade mode with this setting. When you bring up this menu, the current firmware version levels are displayed. Select **Y** to enable Firmware Upgrade mode, or **N** to leave this menu without enabling it.
KEYBOARD LANGUAGE	Sets the language for the computer keyboard attached to the KVM port. To select a keyboard language, double-click it, or use the navigation keys to move the highlight bar to it, then press **[Enter]**. Choices are: AUTO (default), ENGLISH (US), ENGLISH (UK), GERMAN (GER.), GERMAN (SWISS), FRENCH, HUNGARIAN, ITALIAN, JAPANESE, KOREAN, RUSSIAN, SPANISH, SWEDISH and TRADITIONAL CHINESE.
SET CONSOLE MODE	This setting selects which console (internal / external) to enable: **0 –** Both consoles enabled **1 –** LCD console only **2 –** External console only Use the spacebar to cycle to the choice you want. The default is 0.

F5: SKP

Clicking the **F5** field or pressing **[F5]** invokes Skip mode. This function enables you to easily skip backward or forward – switching the console focus from the currently active computer port to the previous or next available one.

- The selection of computers to be available for skip mode switching is made with the *Scan–Skip* mode setting under the **F3: SET** function (see page 36).
- When you are in skip mode:

  press [←] to switch to the previous computer in the list

  press [→] to switch to the next computer in the list

  press [↑] to switch to the last computer on the previous station in the list

  press [↓] to switch to the first computer on the next station in the list.

Note: When you skip, you only skip to the the previous or next available computer that is in the *Scan–Skip* mode selection (page 37).

- If a port has been selected for *Scan–Skip* mode, when the focus switches to that port a left/right triangle symbol appears before its port ID display.
- While skip mode is in effect, the console will not function normally. You must exit skip mode in order to regain control of the console.
- To exit skip mode, press **[Spacebar]** or **[Esc]**.

F6: BRC

F6 is an administrator only function. Clicking the **F6** field, or pressing **[F6]**, invokes *Broadcast* (BRC) mode. When this function is in effect, commands sent from the console are broadcast to to all available computers on the installation.

This function is particularly useful for operations that need to be performed on multiple computers, such as performing a system wide shutdown, installing or upgrading software, etc.

BRC works in conjunction with the **F2: LIST** function. The LIST function (see page 35), is used to broaden or narrow the focus of which ports appear on the OSD main screen. When you broadcast a command, it only goes to the ports currently listed on the OSD main screen.

- While BRC mode is in effect, a speaker symbol appears before the port ID display of the port that currently has the console focus.
- While BRC mode is in effect, the mouse will not function normally. You must exit BRC mode in order to regain control of the mouse.
- To exit BRC mode, invoke the OSD (with the OSD hotkey), then click the **F6** field, or press **[F6]**, to turn BRC mode off.

F7: SCAN

Clicking the **F7** field or pressing **[F7]** invokes *Auto Scan* mode. This function allows you to automatically switch among the available computers at regular intervals so that you can monitor their activity without having to take the trouble of switching yourself.

- The selection of computers to be included for auto-scanning is made with the *Scan–Skip* mode setting under the **F3: SET** function (see page 37).
- The amount of time that each port displays for is set with the *Scan Duration* setting under the **F3: SET** function (see page 36). When you want to stop at a particular location, press the **[Spacebar]** to stop scanning.
- If the scanning stops on an empty port, or one where the computer is attached but is powered Off, the monitor screen will be blank, and the mouse and keyboard will have no effect. After the *Scan Duration* time is up, the scan function will move on to the next port.
- As each computer is accessed, an **S** appears in front of the port ID display to indicate that it is being accessed under *Auto Scan* mode.
- While *Auto Scan* mode is in effect, the console will not function normally. You must exit *Auto Scan* mode in order to regain control of the console.
- While you are in *Auto Scan* mode, you can pause the scanning in order to keep the focus on a particular computer either by pressing **[P]**, or with a left-click of the mouse. See *Invoking Auto Scan*, page 48, for details.
- To exit *Auto Scan* mode, press the **[Spacebar]** or **[Esc]**.

F8: LOUT

Clicking the **F8** field, or pressing **[F8]** logs you out of OSD control of the computers, and blanks the console screen. This is different from simply pressing **[Esc]** when you are at the main screen to deactivate the OSD. With this function you must log in all over again to regain access to the OSD, whereas with **[Esc]**, all you have to do to reenter the OSD is tap the OSD hotkey.

Note: 1. When you reenter the OSD after logging out, the screen stays blank except for the OSD main screen. You must input your username and password before you can continue.

2. If you reenter the OSD after logging out, and immediately use **[Esc]** to deactivate the OSD without having selected a port from the OSD menu, a null port message displays on the screen. The OSD hotkey will bring up the main OSD screen

Chapter 5
Keyboard Port Operation

Hotkey Port Control

Hotkey port control allows you to provide KVM focus to a particular computer directly from the keyboard. The KL3116 / KL3116T provides the following hotkey port control features:

- Selecting the Active Port
- Auto Scan Mode Switching
- Skip Mode Switching
- Computer Keyboard / Mouse Reset

The following settings can also be controlled in *Hotkey* mode:

- Setting the Beeper
- Setting the Quick Hotkey
- Setting the OSD Hotkey
- Setting the Port Operating System
- Restoring the OSD Default Values

Invoke Hotkey Mode

All hotkey operations begin by invoking *Hotkey* mode.[1] There are two possible keystroke sequences used to invoke *Hotkey* mode, though only one can be operational at any given time:

Number Lock and Minus Keys

1. Hold down the **[Num Lock]** key;
2. Press and release the **[-]** (minus) key;
3. Release the **[Num Lock]** key:

```
[Num Lock] + [-]
```

Control and F12 Keys

1. Hold down the **[Ctrl]** key;
2. Press and release the **[F12]** key;
3. Release the **[Ctrl]** key:

```
[Ctrl] + [F12]
```

When *Hotkey* mode is active:

- A command line appears on the monitor screen. The command line prompt is the word *Hotkey:* in white text on a blue background, and displays the subsequent hotkey information that you key in.
- Ordinary keyboard and mouse functions are suspended – only hotkey compliant keystrokes (described in the sections that follow), can be input.

Pressing **[Esc]** exits *Hotkey* mode.

1. Make sure that the *Hotkey Command Mode* function is enabled and that you key in the appropriate *Hotkey.* See page 37 for details.

Select the Active Port

Each KVM port is assigned a port ID (see *Port ID Numbering*, page 30). You can directly access any computer on the installation with a hotkey combination that specifies the port ID of the KVM port that a computer is connected to. To access a computer using hotkeys:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Key in the port ID.

   The port ID numbers display on the command line as you key them in. If you make a mistake, use **[Backspace]** to erase the wrong number.
3. Press **[Enter]**.

   After you press [Enter], the KVM focus switches to the designated computer and you automatically exit hotkey mode.

Note: In hotkey mode, KVM focus will not switch to a port if an invalid switch or port number is entered. The hotkey command line will continue to display on the screen until you enter a valid switch and port number combination, or exit hotkey mode.

Auto Scan Mode

Auto Scan automatically switches, at regular intervals, among all the KVM ports that have been set as accessible under *Scan–Skip Mode*, so that their activity can be monitored automatically. See *Scan–Skip Mode* on page 37 for more information.

Invoking Auto Scan:

To start *Auto Scan*, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Press **[A]**, then **[Enter]** – you automatically exit hotkey mode, and enter *Auto Scan* mode.
   - While you are in *Auto Scan* mode, you can pause the scanning in order to keep the focus on a particular computer either by pressing [P] or with a left click of the mouse. During the time that auto-scanning is paused, the command line displays: **Auto Scan**: **Paused**.

     Pausing when you want to keep the focus on a particular computer is more convenient than exiting *Auto Scan* mode because when you resume scanning, you start from where you left off. If, on the other hand, you exited and restarted, scanning would start over from the very first computer on the installation.

     To resume Auto Scanning, press any key or left-click. Scanning continues from where it left off.

   - While *Auto Scan* mode is in effect, ordinary keyboard and mouse functions are suspended – only *Auto Scan* mode compliant keystrokes and mouse clicks can be input. You must exit *Auto Scan* mode in order to regain normal control of the console.
3. To exit *Auto Scan* mode press **[Esc]** or **[Spacebar]**. Auto-scanning stops when you exit *Auto Scan* mode.

Skip Mode

This feature allows you to switch between computers in order to monitor them manually. You can dwell on a particular port for as long as you like – as opposed to auto-scanning, which automatically switches after a fixed interval. To invoke *Skip* mode, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Key in **[Arrow]**
   - Where [Arrow] refers to one of the arrow keys. After you press an arrow, you automatically exit hotkey mode and enter *Skip* mode where you can switch ports as follows:

←	Skips to the first accessible port. (See *Scan/Skip Mode*, page 37, for information regarding accessible ports.)
→	Skips to the next accessible port.
↑	Skips to the last accessible port of the previous station.
↓	Skips to the first accessible port of the next station.

   - Once you are in *Skip* mode, you can keep on skipping by pressing the arrow keys. You don't have to use the [Num Lock] + [-] combination again.
   - While *Skip* mode is in effect, ordinary keyboard and mouse functions are suspended – only *Skip* mode compliant keystrokes can be input. You must exit *Skip* mode in order to regain normal control of the console.
3. To exit *Skip* mode, press **[Esc]** or **[Spacebar]**.

Computer Keyboard / Mouse Reset

If the keyboard or mouse cease to function on the computer connected to the currently selected port, you can perform a keyboard / mouse reset on the computer. This function is essentially the same as unplugging and replugging the keyboard and mouse on the target computer. To perform a computer keyboard / mouse reset, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Press **[F5].**

After you press [F5] you automatically exit *Hotkey* mode and regain keyboard and mouse control on the computer connected to the KVM port. If you fail to regain keyboard / mouse control on the computer after pressing [F5], perform a system reset. For more information see *Lock LEDs & Reset Switch*, page 7.

Hotkey Beeper Control

The beeper (see Activate Beeper, page 40) can be hotkey toggled on and off. To toggle the beeper, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Press **[B]**.

After you press [B], the beeper toggles on or off. The command line displays *Beeper On* or *Beeper Off* for one second; then the message disappears and you automatically exit hotkey mode.

Quick Hotkey Control

The *Quick Hotkey* (see *HOTKEY*, page 37) can be toggled between [Num Lock] + [-], and [Ctrl] + [F12]. To toggle the *Quick Hotkey*:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Press **[H]**.

After you press [H], the command line displays *HOTKEY HAS BEEN CHANGED* for one second; then the message disappears and you automatically exit *Hotkey* mode.

OSD Hotkey Control

The *OSD Hotkey* (see *HOTKEY*, page 37) can be toggled between [Scroll Lock], [Scroll Lock] and [Ctrl], [Ctrl]. To toggle the *OSD Hotkey*, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Press **[T]**.

After you press [T], the command line displays *HOTKEY HAS BEEN CHANGED* for one second; then the message disappears and you automatically exit *Hotkey* mode.

Port OS Control

A port's operating system can be changed to match the operating system of an attached computer. To change a port's operating system, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Key in **[Function]**, where [Function] refers to one of the function keys in the following table:

Function Key	Description
F1	Sets the Port OS to Windows
F2	Sets the Port OS to Mac
F3	Sets the Port OS to Sun

After pressing a function key you automatically exit *Hotkey* mode.

Restore Default Values

This administrator only hotkey restores the KL3116 / KL3116T default values. See *RESTORE DEFAULT VALUES*, page 40. To restore the default values, key in the following hotkey combination:

1. Invoke hotkey mode with the **[Num Lock]** + **[-]** or **[Ctrl]** + **[F12]** combination.
2. Press **[R]**.
3. Press **[Enter]**.

   After you press [Enter], the command line displays *RESET TO DEFAULT SETTING* for three seconds; then the message disappears and you automatically exit *Hotkey* mode.

Hotkey Summary Table

[Num Lock] + [-] or [Ctrl] + [F12]	[A] [Enter] or [Q] [Enter]	Invokes *Auto Scan* mode. When *Auto Scan* mode is in effect, [P] or left-click pauses auto-scanning. When auto-scanning is paused, pressing any key or another left-click resumes auto-scanning.
	[B]	Toggles the beeper on or off.
	[Esc] or [Spacebar]	Exits hotkey mode.
	[F1]	Set Operating System to Windows
	[F2]	Set Operating System to Mac
	[F3]	Set Operating System to Sun
	[F5]	Performs a keyboard / mouse reset on the target computer.
	[H]	Toggles the *Quick Hotkey* invocation keys between [Ctrl] + [F12] and [Num Lock] + [-].
	[R] [Enter]	This administrator only hotkey restores the switch's default values. See *RESTORE DEFAULT VALUES*, page 40.
	[SN][PN] [Enter]	Switches access to the computer that corresponds to that port ID.
	[T]	Toggles the *OSD Hotkey* between [Ctrl] [Ctrl] and [Scroll Lock] [Scroll Lock].
	[←]	Invokes *Skip* mode and skips from the current port to the first accessible port previous to it.
	[→]	Invokes *Skip* mode and skips from the current port to the next accessible port.
	[↑]	Invokes *Skip* mode and skips from the current port to the last accessible port of the previous station.
	[↓]	Invokes *Skip* mode and skips from the current port to the first accessible port of the next station.

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Chapter 6
Keyboard Emulation

Mac Keyboard

The PC compatible (101/104 key) keyboard can emulate the functions of the Mac keyboard. The emulation mappings are listed in the table below.

PC Keyboard	Mac Keyboard
[Shift]	Shift
[Ctrl]	Ctrl
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Alt]	Alt
[Print Screen]	F13
[Scroll Lock]	F14
	=
[Enter]	Return
[Backspace]	Delete
[Insert]	Help
[Ctrl]	F15

Note: When using key combinations, press and release the first key (Ctrl), then press and release the activation key.

Sun Keyboard

The PC compatible (101/104 key) keyboard can emulate the functions of the Sun keyboard when the Control key [Ctrl] is used in conjunction with other keys. The corresponding functions are shown in the table below.

PC Keyboard	Sun Keyboard
[Ctrl] [T]	Stop
[Ctrl] [F2]	Again
[Ctrl] [F3]	Props
[Ctrl] [F4]	Undo
[Ctrl] [F5]	Front
[Ctrl] [F6]	Copy
[Ctrl] [F7]	Open
[Ctrl] [F8]	Paste
[Ctrl] [F9]	Find
[Ctrl] [F10]	Cut
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Ctrl] [H]	Help
	Compose
	◆

Note: When using key combinations, press and release the first key (Ctrl), then press and release the activation key.

Chapter 7
Firmware Upgrade

The Firmware Upgrade Utility

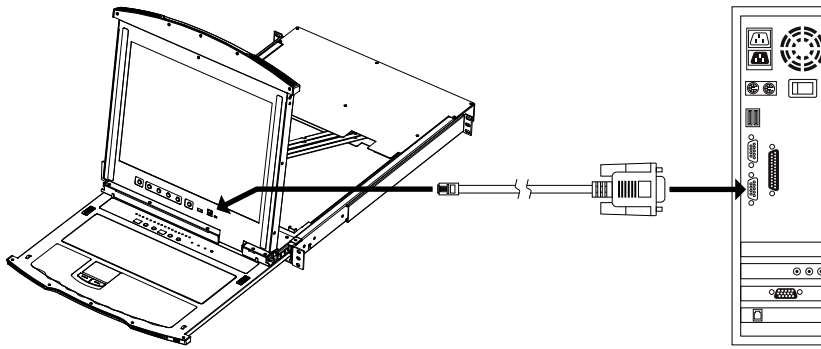
The Windows-based firmware upgrade utility (FWUpgrade.exe) provides a smooth, automated process for upgrading the KVM switch's firmware.

The utility comes as part of a firmware upgrade package that is specific for each device. New firmware upgrade packages are posted on our web site as new firmware revisions become available. Check the web site regularly to find the latest packages and information relating to them.

Before You Begin

To prepare for the firmware upgrade, do the following:

1. From a computer that is not part of your KVM installation go to our Internet support site and choose the model name that relates to your device (KL3116 / KL3116T) to get a list of available firmware upgrade packages.
2. Choose the firmware upgrade package you want to install (usually the most recent) and download it to your computer.
3. Connect the provided firmware upgrade cable to a COM port on your computer and to the firmware upgrade port on the switch.



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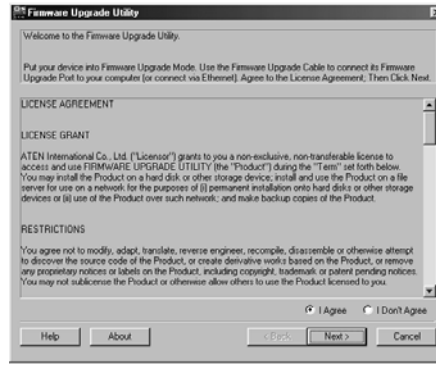
4. Shut down the computers on your KL3116 / KL3116T installation.
5. From your KVM switch console, bring up the OSD (see page 31) and select the **F4 ADM** function.
6. Scroll down to **FIRMWARE UPGRADE** (see page 41). Press **[Enter]**, then press **[Y]** to invoke *Firmware Upgrade* mode. The current firmware upgrade version displays on the screen for your reference.

Starting the Upgrade

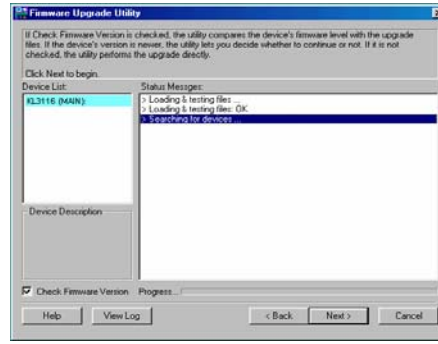
To upgrade your firmware:

1. Run the downloaded firmware upgrade package file, either by double-clicking the file icon, or by opening a command line and entering the full path to it. The firmware upgrade utility *Welcome* screen appears:


Firmware Upgrade Utility
Welcome to the Firmware Upgrade Utility.
Put your device into Firmware Upgrade Mode. Use the Firmware Upgrade Cable to connect its Firmware Upgrade Port to your computer (or connect via Ethernet). Agree to the License Agreement; Then Click Next.
LICENSE AGREEMENT
LICENSE GRANT
ATEN International Co., Ltd. ("Licensor") grants to you a non-exclusive, non-transferable license to access and use FIRMWARE UPGRADE UTILITY (the "Product") during the "Term" set forth below. You may install the Product on a hard disk or other storage device; install and use the Product on a file server for use on a network for the purposes of (i) permanent installation onto hard disks or other storage devices or (ii) use of the Product over such network; and make backup copies of the Product.
RESTRICTIONS
You agree not to modify, adapt, translate, reverse engineer, recompile, disassemble or otherwise attempt to discover the source code of the Product, or create derivative works based on the Product, or remove any proprietary notices or labels on the Product, including copyright, trademark or patent pending notices. You may not sublicense the Product or otherwise allow others to use the Product licensed to you.
I Agree
I Don't Agree
Help
About
< Back
Next >
Cancel

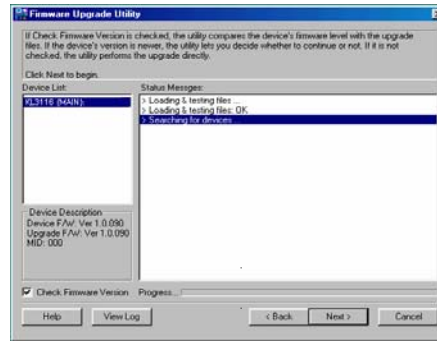
2. Read and *Agree* to the license agreement (enable the I Agree radio button).

3. Click **Next** to continue. The firmware upgrade utility main screen appears:


Firmware Upgrade Utility
If Check Firmware Version is checked, the utility compares the device's firmware level with the upgrade files. If the device's version is newer, the utility lets you decide whether to continue or not. If it is not checked, the utility performs the upgrade directly.
Click Next to begin.
Device List:
KL3116 (MAIN)
Status Messges:
> Loading & testing files ...
> Loading & testing files: OK
> Searching for devices ...
Device Description
Check Firmware Version
Progress...
Help
View Log
< Back
Next >
Cancel

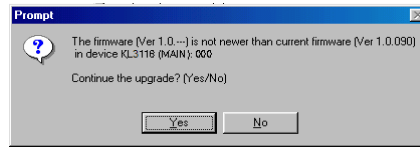
The utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.

As you select a device in the list, its description appears in the *Device Description* panel.


Firmware Upgrade Utility
If Check Firmware Version is checked, the utility compares the device's firmware level with the upgrade files. If the device's version is newer, the utility lets you decide whether to continue or not. If it is not checked, the utility performs the upgrade directly.
Click Next to begin.
Device List:
KL3116 (MAIN)
Status Messges:
> Loading & testing files ...
> Loading & testing files: OK
> Searching for devices ...
Device Description
Device F/W: Ver 1.0.090
Upgrade F/W: Ver 1.0.090
MID: 000
Check Firmware Version
Progress...
Help
View Log
< Back
Next >
Cancel

4. Click **Next** to perform the upgrade.

If you enabled *Check Firmware Version*, the utility compares the device's firmware level with that of the upgrade files. If it finds that the device's version is higher than the upgrade version, it brings up a dialog box informing you of the situation and gives you the option to continue or cancel the upgrade.

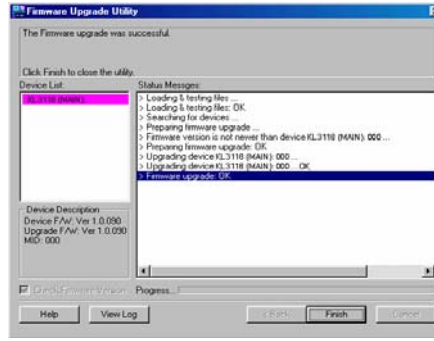

Prompt
The firmware (Ver 1.0.---) is not newer than current firmware (Ver 1.0.090) in device KL3116 (MAIN): 000
Continue the upgrade? (Yes/No)
Yes
No

If you didn't enable *Check Firmware Version*, the utility installs the upgrade files without checking whether they are a higher level or not.

As the upgrade proceeds, status messages appear in the *Status Messages* panel and the progress toward completion is shown on the *Progress* bar.

Upgrade Succeeded

After the upgrade has completed, a screen appears to inform you that the procedure was successful:



Click **Finish** to close the firmware upgrade utility.

Upgrade Failed

If the upgrade failed to complete successfully a dialog box appears asking if you want to retry. Click **Yes** to retry. If you Click **No**, the *Upgrade Failed* screen appears. Click **Cancel** to close the firmware upgrade utility. See the next section, *Firmware Upgrade Recovery*, for how to proceed.

Firmware Upgrade Recovery

There are basically two conditions that call for firmware upgrade recovery:

- When you begin a firmware upgrade, but decide not to proceed with it.
- When the mainboard firmware upgrade fails.

Note: If one of the cascaded switches fails to upgrade successfully, unplug it from the installation and perform the recovery and upgrade operation independently. After it has been successfully upgraded, plug it back into the installation.

To perform a firmware upgrade recovery, do the following:

1. Power off the KL3116 / KL3116T.
2. Slide the *Firmware Upgrade Switch* (see page 8) to the **Recover** position.
3. Use the firmware upgrade cable (provided with this unit), to connect a COM port on your computer with the firmware upgrade port of the switch.
4. Power on the KL3116 / KL3116T.
5. Follow the upgrade procedures that begin with the *Starting the Upgrade* section (see page 58).
6. After the upgrade completes successfully, power off the KL3116 / KL3116T.
7. Slide the *Firmware Upgrade Switch* back to the **Normal** position.
8. Power on the KL3116 / KL3116T.

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Appendix

Safety Instructions

General

- Read all of these instructions. Save them for future reference.
- Follow all warnings and instructions marked on the device.
- Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- Do not use the device near water.
- Do not place the device near, or over, radiators or heat registers.
- The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.
- Never spill liquid of any kind on the device.
- Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- The device is designed for IT power distribution systems with 230V phase-to-phase voltage.
- To prevent damage to your installation it is important that all devices are properly grounded.
- The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.
- Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over.

(Continues on next page.)

(Continued from previous page.)

- If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; Be sure that nothing rests on any cables.
- Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
  - The power cord or plug has become damaged or frayed.
  - Liquid has been spilled into the device.
  - The device has been exposed to rain or water.
  - The device has been dropped, or the cabinet has been damaged.
  - The device exhibits a distinct change in performance, indicating a need for service.
  - The device does not operate normally when the operating instructions are followed.
- Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.
- Do not connect the RJ-11 connector marked “UPGRADE” to a public telecommunication network.

Rack Mounting

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a device from the rack.
- Use caution when pressing the device rail release latches and sliding a device into or out of a rack; the slide rails can pinch your fingers.
- After a device is inserted into the rack, carefully extend the rail into a locking position, and then slide the device into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Make sure that all equipment used on the rack – including power strips and other electrical connectors – is properly grounded.
- Ensure that proper airflow is provided to devices in the rack.
- Ensure that the operating ambient temperature of the rack environment does not exceed the maximum ambient temperature specified for the equipment by the manufacturer
- Do not step on or stand on any device when servicing other devices in a rack.

Technical Support

Technical support is available both by email and online (with a browser over the web):

International

Email Support		support@aten.com
Online Support	Technical Support	http://support.aten.com
	Troubleshooting Documentation Software Updates	http://www.aten.com
Telephone Support		886-2-8692-6959

North America

Email Support		ATEN TECH	support@aten-usa.com
		ATEN NJ	sales@aten.com
Online Support	Technical Support	ATEN TECH	http://www.aten-usa.com/support
		ATEN NJ	http://support.aten.com
	Troubleshooting Documentation Software Updates	ATEN TECH	http://www.aten-usa.com
		ATEN NJ	http://www.aten.com
Telephone Support		ATEN TECH	1-888-999-ATEN
		ATEN NJ	1-732-356-1703

When you contact us, please have the following information ready beforehand:

- Product model number, serial number, and date of purchase.
- Your computer configuration, including operating system, revision level, expansion cards, and software.
- Any error messages displayed at the time the error occurred.
- The sequence of operations that led up to the error.
- Any other information you feel may be of help.

Specifications

Function			KL3116 / KL3116T
Computer Connections	Direct		16
	Max		512 (via daisy-chain)
Port Selection			OSD, Hotkey, Pushbutton
Connectors	External Console Port		1 x SPHD-18 (Male)
	External Mouse Port		1 x USB Type-A (Female)
	KVM Ports		16 x SPHD-15 (Female)
	Daisy-chain		1 x DB-25 (Male)
	FW Upgrade		1 x RJ-11 (Female)
	Power		1 x 3-prong AC Socket
	USB 1.1 Hub		1 x USB Type-A (Female)
Switches	Reset		1 x Semi-recessed Pushbutton
	Power		1 x Rocker Switch
	Firmware Upgrade		1 x Switch
	LCD Adjustment		4 x Pushbutton
	LCD Power		1 x LED Pushbutton (Orange)
	KVM OSD		1 x Pushbutton (available on the KL3116T only)
	Port Selection		2 x Pushbutton
	Station Selection		2 x Pushbutton
LEDs	On Line		16 (Green)
	Port ID		2 x 7-segment LED Display (Yellow)
	Station ID		2 x 7-segment LED Display (Yellow)
	Power		1 (Blue)
	Lock	Num	1 (Green)
		Caps	1 (Green)
		Scroll	1 (Green)
Emulation	Keyboard / Mouse		PS/2, USB
Video			1280 x 1024 @ 75 Hz; DDC2B
Scan Interval (OSD Select)			1–255 sec.
I/P Rating			100–240 VAC, 50/60 Hz, 1 A
Power Consumption			120V, 27.5W / 230V, 28W
Environment	Operating Temp.		0–40^{o} C
	Storage Temp.		-20–60^{o} C
	Humidity		0–80% RH, Noncondensing
Physical Properties	Housing		Metal + Plastic
	Weight		17.10 kg
	Dimensions (L x W x H)		68.40 x 48.20 x 4.40 cm

OSD Factory Default Settings

The factory default settings are as follows.

Setting	Default
OSD Hotkey	[Scroll Lock] [Scroll Lock]
Port ID Display Position	Upper Left Corner
Port ID Display Duration	3 Seconds
Port ID Display Mode	The Port Number plus the Port Name
Scan Duration	5 Seconds
Scan/Skip Mode	All
Screen Blanker	0 (Disabled)
Logout Timeout	0 (Disabled)
Beeper	Y (Activated)
Accessible Ports	F (Full Access) For all Users on all Ports
Hotkey Command Mode	Y (Activated)
Set Operating System	Win
Keyboard Language	Auto
Set Console Mode	0: Dual Console
Hotkey	[Num Lock] + [-]
Restore Default Values	N
Clear the Name List	N
Reset Station IDs	Y
Firmware Upgrade	N

Supported KVM Switches

The table below lists KVM switches that are compatible with the KL3116 / KL3116T and the type of expansion that they use. (KVM switches listed below are sold separately. Contact your dealer for details.)

Expansion Type	Brand	Model	Name
Daisy-chain	ALTUSEN	KH3116	16 Port High-Density KVM Switch
	ALTUSEN	KH1508 / KH1516	8 / 16 Port High-Density KVM Switch
	ALTUSEN	KH0116	16 Port High-Density KVM Switch
	ATEN	CS1708 / CS1708A	8 Port USB KVM Switch
	ATEN	CS1716 / CS1716A	16 Port USB KVM Switch
	ATEN	ACS1208 / ACS1208A	8 Port PS/2 KVM Switch
	ATEN	ACS1216 / ACS1216A	16 Port PS/2 KVM Switch

Please keep in mind the following limitations when installing more than one KVM switch. Where distances are mentioned, they refer to the cumulative length of all cables used to connect the devices.

- The maximum distance between the KL3116 / KL3116T and the last switch in the daisy-chain cannot exceed 100 meters, regardless of the number of switches in the daisy-chain.
- The maximum distance between any two KVM switches in the daisy-chain cannot exceed 15 meters.

Computer Connection Table

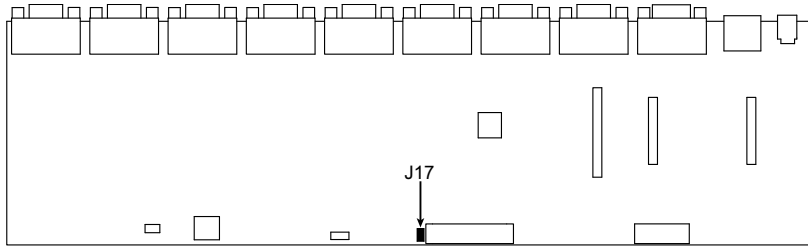
The following table indicates the relationship between the number of compatible KVM switches that are cascaded from the KL3116 / KL3116T and the number of computers that they control on a daisy-chained installation.

No.	Computers	No.	Computers	No.	Computers	No.	Computers
1	1–16	9	129–144	17	257–272	25	385–400
2	17–32	10	145–160	18	273–288	26	401–416
3	33–48	11	161–176	19	289–304	27	417–432
4	49–64	12	177–192	20	305–320	28	433–448
5	65–80	13	193–208	21	321–336	29	449–464
6	81–96	14	209–224	22	337–352	30	465–480
7	97–112	15	225–240	23	353–368	31	481–496
8	113–128	16	241–256	24	369–384	32	497–512

Clear Login Information

If you are unable to perform an administrator login (because the username and password information has become corrupted, or you have forgotten it, for example), you can clear the login information with the following procedure:

1. Power off the switch and remove the top cover from the unit chassis.
2. Short the jumper labeled *Default Password* (J17) on the switch's main board.



3. Power on the switch.

   When you power the switch on, the following message appears on the LCD display:

   ```
   USERNAME AND PASSWORD INFORMATION HAS BEEN CLEARED.
   PLEASE POWER OFF THE SWITCH, REMOVE THE JUMPER, CLOSE
   THE CASE, THEN RESTART.
   ```

4. After you start back up, the OSD login function acts exactly the way it did the first time the switch was run (see page 31) and you can reset passwords for the administrators and users.

Optional Rack Mounting

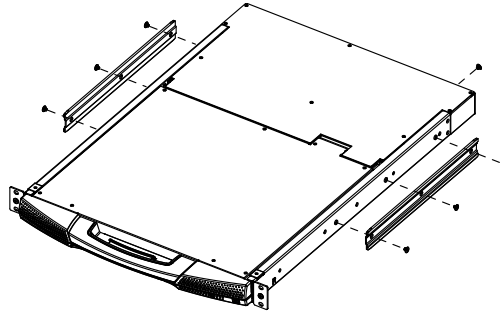
For convenience and flexibility, three optional rack mounting kits are available:

- A long bracket standard rack mounting kit for 68–105 cm racks;
- A short bracket Easy-Installation rack mount kit for 57–70 cm racks;
- A long bracket Easy-Installation rack mount kit for 68–105 cm racks.

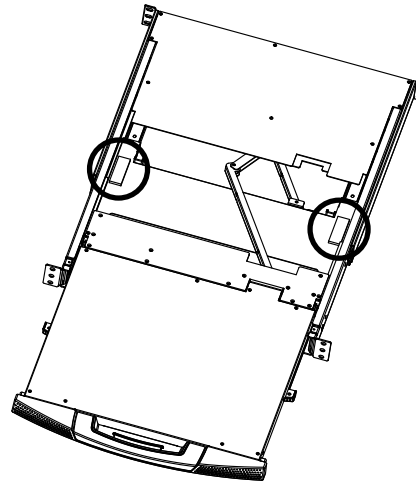
To install the long bracket standard rack mount kit, simply replace the short L brackets on the standard rack mount kit with the long ones, and mount the switch according to the instructions given on page 12.

With an *Easy-Installation*, kit, one person can mount the switch. To install the *Easy-Installation* kit, do the following:

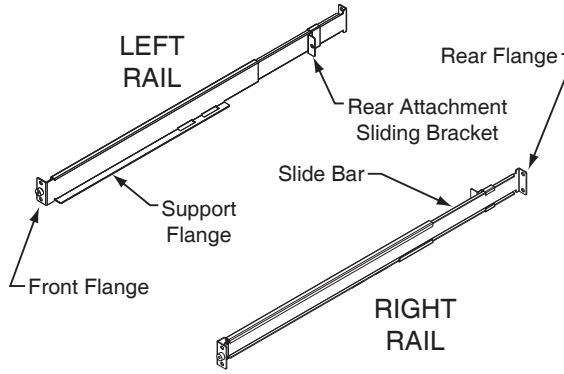
1. Remove the standard L brackets and the side mounting brackets from both sides of the switch. Also remove the rear panel grounding screw.



2. Packing material has been inserted to protect the KL3116 / KL3116T during shipping. Slide the LCD module out until the packing material is visible. Remove the packing material before installing the unit, as shown in the diagram below.

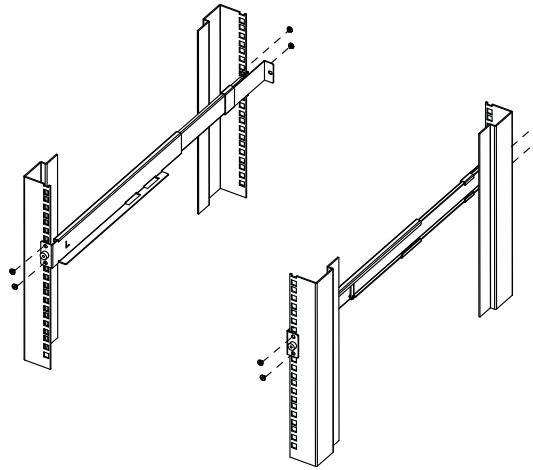


3. Attach the left and right *easy-installation* mounting rails to the inside of the rack. The flange that supports the switch will be to the inside.

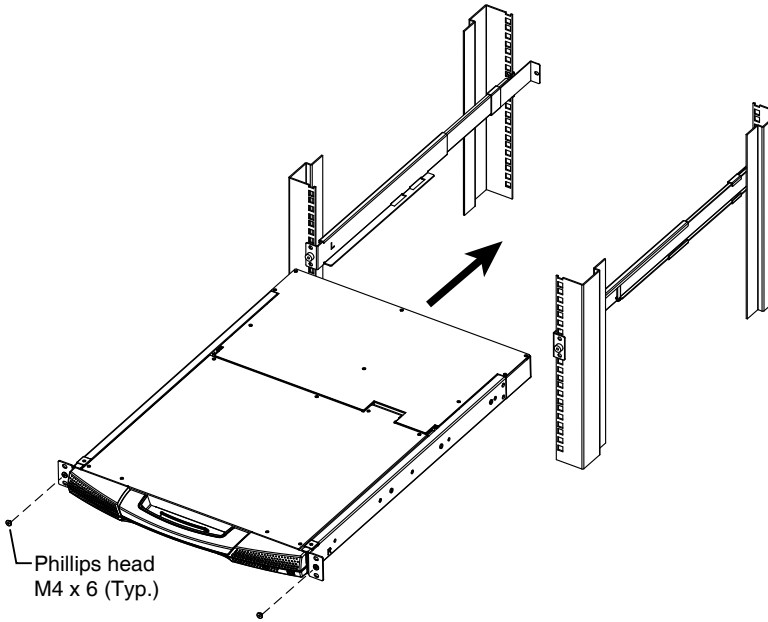


a) Screw the front flanges to the rack first.

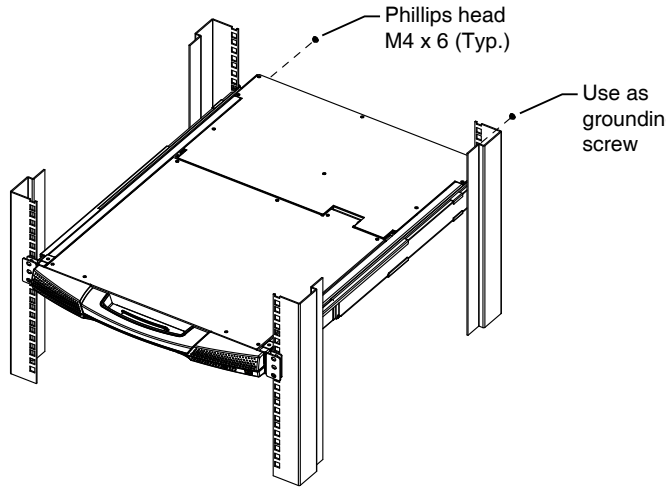
b) Slide the bars with the rear flanges toward the rack until the flanges make contact with the rack, then screw the rear flanges to the rack.



4. Slide the switch onto the support flanges. Use the screws supplied with this package to loosely attach the front of the switch to the front of the rack (only tighten the screws part way).



5. Slide the rear attachment sliding brackets along the slide bars until they contact the rear of the switch, then use the screws supplied with this package to attach the bars to the rear of the switch (tighten the screws all the way). Use the screw indicated below to connect the grounding wire to the rack.



6. Slide the switch open and closed a couple of times to be sure that it is properly aligned and operating smoothly. (See page 21 for opening and closing procedures.)

7. After determining that the switch is properly lined up and operating correctly, finish up by fully tightening down the partially tightened front attachment screws inserted in step 3.

Troubleshooting

Overview

Operation problems can be due to a variety of causes. The first step in solving them is to make sure that all cables are securely attached and seated completely in their sockets.

In addition, updating the product's firmware may solve problems that have been discovered and resolved since the prior version was released. If your product is not running the latest firmware version, we strongly recommend that you upgrade. See *Firmware Upgrade*, page 57, for upgrade details.

General

Problem	Solution
Keyboard and/or mouse do not work after computer boots up.	For computers with PS/2 connectors, if you are using 2L-520xP cables, make sure that all the connectors (keyboard, video, and mouse) are plugged into their ports on the computer before starting the computer. Plugging the cables in after the computer has booted will not resolve the problem.
When I emulate the Sun keyboard, I can't go into OK Mode ([Stop] [A]).	To go into OK Mode, use the following key sequence: 1. Press and release [Ctrl]. 2. Press and hold [T]. 3. Press and hold [A]. 4. Release [T] and [A] together.
There are ghost images on the external monitor.	The distance between the external console and the KL3116 / KL3116T is too great. The maximum VGA cable distance should not exceed 20 m and, in some cases, may need to be shorter. Replace the VGA cable with one of an appropriately short length.

Sun Systems

Problem	Solution

Video display problems with HDB-15 interface systems (e.g. Sun Blade 1000 servers).	The display resolution should be set to 1024 x 768 @ 60 Hz.
	Under Text Mode:
	1. Go to **OK mode** and issue the following commands:
	`setenv output-device screen:r1024x768x60`
	`reset-all`
	Under XWindow:
	1. Open a console and issue the following command:
	`m64config -res 1024x768x60`
	2. Log out.
	3. Log in.

Video display problems with 13W3 interface systems (e.g. Sun Ultra servers).*	The display resolution should be set to 1024 x 768 @ 60 Hz.
	Under Text Mode:
	1. Go to **OK mode** and issue the following commands:
	`setenv output-device screen:r1024x768x60`
	`reset-all`
	Under XWindow:
	1. Open a console and issue the following command:
	`ffbconfig -res 1024x768x60`
	2. Log out.
	3. Log in.

***** These solutions work for most common Sun VGA cards. If these procedures fail to resolve the problem, consult the manual for the Sun VGA card.

Dedicated Invocation Keys

Two dedicated keys are provided on the keyboard module to make it easy to invoke Hotkey Mode and the OSD (as shown in the diagram below):

Note: These keys are toggles. Press once to invoke the feature, press again to exit.

About SPHD Connectors

This product uses SPHD connectors for its KVM and/or Console ports. We have specifically modified the shape of these connectors so that only KVM cables that we have designed to work with this product can be connected.

Alternative Touchscreen Cursor Synchronization

Note: This section refers to features available on the KL3116T only.

You can use the one-point calibration method to resynchronize the cursor (see page 38), or use the following method to resynchronize the cursor without having to access the OSD.

1. Touch the center of the screen.
2. Keeping your finger on the screen, move the cursor to the closest corner of the screen.
3. Lift your finger from the touchscreen and touch the cursor. The cursor should track properly when you move your finger across the screen.

Limited Warranty

ALTUSEN warrants this product against defects in material or workmanship for a period of one (1) year from the date of purchase. If this product proves to be defective, contact ALTUSEN's support department for repair or replacement of your unit. ALTUSEN will not issue a refund. Return requests can not be processed without the original proof of purchase.

When returning the product, you must ship the product in its original packaging or packaging that gives an equal degree of protection. Include your proof of purchase in the packaging and the RMA number clearly marked on the outside of the package.

This warranty becomes invalid if the factory-supplied serial number has been removed or altered on the product.

This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence or modification of any part of the product. This warranty does not cover damage due to improper operation or maintenance, connection to improper equipment, or attempted repair by anyone other than ALTUSEN. This warranty does not cover products sold AS IS or WITH FAULTS.

IN NO EVENT SHALL ALTUSEN'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT. FURTHER, ALTUSEN SHALL NOT BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, ITS ACCOMPANYING SOFTWARE, OR ITS DOCUMENTATION. ALTUSEN SHALL NOT IN ANY WAY BE RESPONSIBLE FOR, WITHOUT LIMITATION, LOSS OF DATA, LOSS OF PROFITS, DOWNTIME, GOODWILL, DAMAGE OR REPLACEMENT OF EQUIPMENT OR PROPERTY, AND ANY EXPENSES FROM RECOVERY, PROGRAMMING, AND REPRODUCTION OF ANY PROGRAM OR DATA.

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ALTUSEN reserves the right to revise or update its product, software or documentation without obligation to notify any individual or entity of such revisions, or update.

For details about extended warranties, please contact one of our dedicated value added resellers.

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